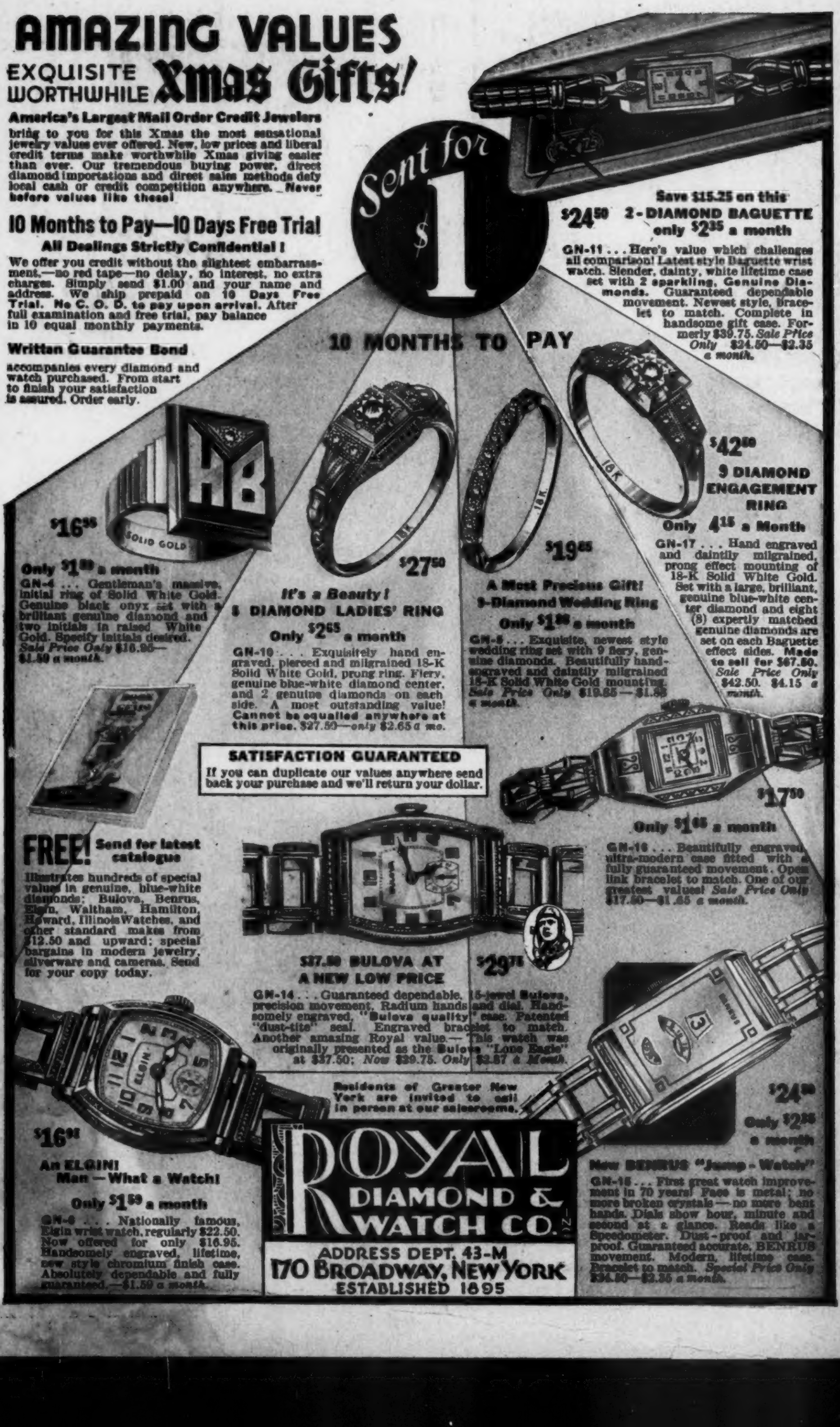
JANUARY

20¢

ASTOUNDING

STORIES OF SUPER-SCIENCE

THE FIFTH-DIMENSION TUBE By MURRAY LEINSTER



AMAZING VALUES

EXQUISITE WORTHWHILE Xmas Gifts!

America's Largest Mail Order Credit Jewelers bring to you for this Xmas the most sensational jewelry values ever offered. New, low prices and liberal credit terms make worthwhile Xmas giving easier than ever. Our tremendous buying power, direct diamond importations and direct sales methods defy local cash or credit competition anywhere. **Never before values like these!**

10 Months to Pay—10 Days Free Trial

All Dealings Strictly Confidential!

We offer you credit without the slightest embarrassment,—no red tape—no delay, no interest, no extra charges. Simply send \$1.00 and your name and address. We ship prepaid on **10 Days Free Trial. No C. O. D. to pay upon arrival.** After full examination and free trial, pay balance in 10 equal monthly payments.

Written Guarantee Bond accompanies every diamond and watch purchased. From start to finish your satisfaction is assured. Order early.

10 MONTHS TO PAY

Save \$15.25 on this

$\$24^{50}$ **2-DIAMOND BAGUETTE only $\$2^{35}$ a month**

GN-11 . . . Here's value which challenges all comparison! Latest style Baguette wrist watch. Slender, dainty, white lifetime case set with **2 sparkling, Genuine Diamonds.** Guaranteed dependable movement. Newest style, bracelet to match. Complete in handsome gift case. Formerly \$39.75. *Sale Price Only* \$24.50—\$2.35 *a month.*

$\$16^{95}$

Only $\$1^{50}$ a month

GN-4 . . . Gentleman's massive, initial ring of Solid White Gold. Genuine black onyx set with a brilliant genuine diamond and two initials in raised White Gold. Specify initials desired. *Sale Price Only* \$16.95—\$1.50 *a month.*

$\$27^{50}$

It's a Beauty!

5 DIAMOND LADIES' RING

Only $\$2^{65}$ a month

GN-10 . . . Exquisitely hand engraved, pierced and milgrained 18-K Solid White Gold, prong ring. Fiery, genuine blue-white diamond center, and 2 genuine diamonds on each side. A most outstanding value! **Cannot be equalled anywhere at this price.** \$27.50—*only* \$2.65 *a* mo.

$\$19^{85}$

A Most Precious Gift!

9-Diamond Wedding Ring

Only $\$1^{85}$ a month

GN-5 . . . Exquisite, newest style wedding ring set with 9 fiery, genuine diamonds. Beautifully hand-engraved and daintily milgrained 18-K Solid White Gold mounting. *Sale Price Only* \$19.85—\$1.85 *a month.*

$\$42^{50}$

9 DIAMOND ENGAGEMENT RING

Only 4^{15} a Month

GN-17 . . . Hand engraved and daintily milgrained, prong effect mounting of 18-K Solid White Gold. Set with a large, brilliant, genuine blue-white center diamond and eight (8) expertly matched genuine diamonds are set on each Baguette effect sides. **Made to sell for \$67.50.** *Sale Price Only* \$42.50. \$4.15 *a month.*

SATISFACTION GUARANTEED

If you can duplicate our values anywhere send back your purchase and we'll return your dollar.

$\$17^{50}$

Only $\$1^{65}$ a month

GN-16 . . . Beautifully engraved ultra-modern case fitted with a fully guaranteed movement. Open link bracelet to match. One of our greatest values! *Sale Price Only* \$17.50—\$1.65 *a month.*

FREE! Send for latest catalogue

Illustrates hundreds of special values in genuine, blue-white diamonds; Bulova, Benrus, Elgin, Waltham, Hamilton, Howard, Illinois Watches, and other standard makes from \$12.50 and upward; special bargains in modern jewelry, silverware and cameras. Send for your copy today.

\$37.50 BULOVA AT A NEW LOW PRICE

$\$29^{75}$

GN-14 . . . Guaranteed dependable, 15-jewel Bulova, precision movement. Radium hands and dial. Handsomely engraved, "**Bulova quality**" case. Patented "dust-tite" seal. Engraved bracelet to match. Another amazing Royal value.—This watch was originally presented as the Bulova "Lone Eagle" at \$37.50; *Now* \$29.75. *Only* \$2.87 *a Month.*

Residents of Greater New York are invited to call in person at our salesrooms.

$\$16^{95}$

An ELGIN! Man — What a Watch!

Only $\$1^{59}$ a month

GN-6 . . . Nationally famous, Elgin wrist watch, regularly \$22.50. Now offered for only \$16.95. Handsomely engraved, lifetime, new style chromium finish case. Absolutely dependable and fully guaranteed.—\$1.59 *a month.*

ROYAL DIAMOND & WATCH CO.

ADDRESS DEPT. 43-M
170 BROADWAY, NEW YORK
ESTABLISHED 1895

$\$24^{50}$

Only $\$2^{35}$ a month

New BENRUS "Jump-Watch"

GN-15 . . . First great watch improvement in 70 years! Face is metal; no more broken crystals — no more bent hands. Dials show hour, minute and second at a glance. Reads like a Speedometer. Dust-proof and jar-proof. Guaranteed accurate, BENRUS movement. Modern, lifetime case. Bracelet to match. *Special Price Only* \$24.50—\$2.35 *a month.*

I

Ma
Mo

"I can
have ma
in Rad
have ma
tinued a

VICTO
St. Cl
West

Jump
, to $

"Before
I was ma
I earned
servicing
Radios.
to N.R.I.
off on the

J. A. V
Grand
3107 S.
St. Lou

$300
m

"In looki
ords I fi
in my sp
months.
brought m
only one
your co
have take

HOYT
R. R. 3,
Indianap

Ad

1933

38-5

I will train you at home to fill a BIG PAY Radio Job!

Here's Proof

Made $10,000 More in Radio

"I can safely say that I have made $10,000 more in Radio than I would have made if I had continued at my old job."

VICTOR L. OSGOOD,
St. Cloud Ave.,
West Orange, N. J.

Jumped from $35 to $100 a week

"Before I entered Radio I was making $35 a week. I earned $110 in one week servicing and selling Radios. I owe my success to N.R.I. You started me off on the right foot."

J. A. VAUGHN,
Grand Radio & App. Co.
3107 S. Grand Blvd.,
St. Louis, Mo.

$500 extra in 6 months

"In looking over my records I find I made $500 in my spare time in six months. My best week brought me $107. I have only one regret regarding your course—I should have taken it long ago."

HOYT MOORE,
R. R. 3, Box 919,
Indianapolis, Ind.

If you are dissatisfied with your present job, if you are struggling along in a rut with little or no prospect of anything better than a skinny pay envelope—clip the coupon NOW. Get my big FREE book on the opportunities in Radio. Read how quickly you can learn at home in your spare time to be a Radio Expert—what good jobs my graduates have been getting—real jobs with real futures.

Free Book Tells How Mail Coupon!

Many Radio Experts Make $50 to $100 a Week

In about ten years the Radio Industry has grown from $2,000,000 to hundreds of millions of dollars. Over 300,000 jobs have been created by this growth, and thousands more will be created by its continued development. Many men and young men with the right training—the kind of training I give you in the N.R.I. course—have stepped into Radio at two and three times their former salaries.

Get Ready Now for Jobs Like These

Broadcasting stations use engineers, operators, station managers, and pay up to $5,000 a year. Manufacturers continually employ testers, inspectors, foremen, engineers, service men, buyers, for jobs paying up to $6,000 a year. Radio operators on ships enjoy life, see the world, with board and lodging free, and get good pay besides. Dealers and jobbers employ service men, salesmen, buyers, managers, and pay up to $100 a week. My book tells you about these and many other kinds of interesting Radio jobs.

Many Make $5, $10, $15 a Week Extra in Spare Time Almost at Once

The day you enroll with me I send you material which you should master quickly for doing 28 jobs common in most every neighborhood, for spare-time money. Throughout your course I send you information on servicing popular makes of sets. I give you the plans and ideas that have made $200 to $1,000 a year for N. R. I. men in their spare time. My course is famous as the course that pays for itself.

Television, Short-Wave, Talking Movies, Money Back Agreement Included

Special training in Talking Movies, Television and Home Television experiments, Short-Wave Radio, Radio's use in Aviation, Servicing and Merchandising Sets, Broadcasting; Commercial and Ship Stations are included. I am so sure that N.R.I. can train you satisfactorily that I will agree in writing to refund every penny of your tuition if you are not satisfied with my Lesson and Instruction Service upon completion.

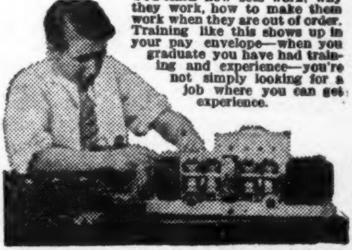
64-page Book of Information FREE

Get your copy today. It's free to all residents of the United States and Canada over 15 years old. It tells you where Radio's good jobs are, what they pay, tells you about my course, what others who have taken it are doing and making. Find out what Radio offers you without the slightest obligation. ACT NOW!

J. E. SMITH, President
National Radio Institute, Dept. 2NM
Washington, D. C.

SPECIAL Radio Equipment for Broad Practical Experience *Given Without Extra Charge*

My Course is not all theory. I'll show you how to use my special Radio equipment for conducting experiments and building circuits which illustrate important principles used in such well-known sets as Westinghouse, General Electric, Philco, R.C.A. Victor, Majestic, and others. You work out with your own hands many of the things you read in our lesson books. This 50-50 method of training makes learning at home easy, interesting, fascinating, intensely practical. You learn how sets work, why they work, how to make them work when they are out of order. Training like this shows up in your pay envelope—when you graduate you have had training and experience—you're not simply looking for a job where you can get experience.



With N.R.I. equipment you learn to build and thoroughly understand set testing equipment—you can use N.R.I. equipment in your spare time service work for extra money.

I have doubled and tripled the salaries of many. Find out about this tested way to BIGGER PAY

RICH REWARDS IN RADIO

Get a Job with a Future

FILL OUT AND MAIL THIS COUPON TODAY

J. E. SMITH, President
National Radio Institute, Dept. 2NM
Washington, D. C.

Send me your 64-page book, "Rich Rewards in Radio." I understand this request does not obligate me.

NAME..
ADDRESS......................................
CITY......................STATE..............

Advanced Training Included - No Extra Charge

20¢

ASTOUNDING STORIES OF SUPER-SCIENCE

Issued Every Other Month

W. M. CLAYTON, Publisher

HARRY BATES, Editor

The Clayton Standard on a Magazine Guarantees:

That the stories therein are clean, interesting, vivid, by leading writers of the day and purchased under conditions approved by the Authors' League of America;
That such magazines are manufactured in Union shops by American workmen;
That each newsdealer and agent is insured a fair profit;
That an intelligent censorship guards their advertising pages.

The other Clayton magazines are:

ACE-HIGH MAGAZINE, RANCH ROMANCES, COWBOY STORIES, CLUES, FIVE-NOVELS MONTHLY, RANGELAND LOVE STORY MAGAZINE, WESTERN ADVENTURES, STRANGE TALES, COMPLETE WESTERN LOVE NOVELETTES, COMPLETE MYSTERY NOVELETTES, COMPLETE ADVENTURE NOVELETTES, MY LOVE STORY MAGAZINE, and BUNK.

More Than Two Million Copies Required to Supply the Monthly Demand for Clayton Magazines.

VOL. XI, NO. 3 JANUARY, 1933

CONTENTS

COVER DESIGN H. W. WESSO
Suggested by a Scene in "The Fifth-Dimension Tube."

"JUST AROUND THE CORNER" HARRY BATES 297
An Editorial.

UNDER ARCTIC ICE H. G. WINTER 298
Ken Torrance Races Poleward to the Aid of the Submarine Peary, *Trapped in an Icy Limbo of Avenging Sealmen.* (A Complete Novelette.)

THE FLOATING ISLAND OF MADNESS JASON KIRBY 326
Far above the Arabian Desert Three Secret Service Men Find an Aerial Island Whose Inhabitants Are—Madmen.

IN THE NEXT ISSUE 345

TWO THOUSAND MILES BELOW CHARLES WILLARD DIFFIN 346
As Part of Their Titanic Plan, Rawson and Loah-San Return to Sacrifice Themselves in the Flaming Caverns of the Red Ones. (Conclusion.)

THE FIFTH-DIMENSION TUBE MURRAY LEINSTER 366
By Way of Professor Denham's Tube, Tommy and Evelyn Invade the Inimical Fifth-Dimensional World of Golden Cities and Tree-Fern Jungles and Ragged Men. (A Complete Novelette.)

THE SCIENCE FORUM CARLYLE ELLIOTT, Ph.D. 418
A Place Where Your Questions on Science Are Answered.

THE READERS' CORNER ALL OF US 420
A Meeting Place for Readers of ASTOUNDING STORIES.

Single Copies, 20 Cents Yearly Subscription, $1.00

Issued bi-monthly by The Clayton Magazines, Inc., 155 East 44th Street, New York, N. Y. W. M. Clayton, President; Francis P. Pace, Secretary. Entered as second-class matter December 7, 1929, at the Post Office at New York, N. Y., under Act of March 3, 1879. Copyright, 1932, by The Clayton Magazines, Inc. Title registered as a Trade-Mark in the U. S. Patent Office. Member Newsstand Group. For advertising rates address The Newsstand Group, Inc., 155 East 44th Street, New York; or The Wrigley Bldg., Chicago.

WHAT *will you be doing* ONE YEAR *from today?*

THREE hundred and sixty-five days from now — what?

Will you still be struggling along in the same old job at the same old salary — worried about the future — never quite able to make both ends meet?

One year from today will you still be putting off your start toward success — thrilled with ambition one moment and then cold the next — delaying, waiting, fiddling away the precious hours that will never come again?

Don't do it, man — don't do it.

There is no greater tragedy in the world than that of a man who stays in the rut all his life, when with just a little effort he could advance.

Make up your mind today that you're going to train yourself to do some one thing well. Choose the work you like best in the list below, mark an X beside it, and without cost or obligation, at least get the full story of what the I. C. S. can do for you.

INTERNATIONAL CORRESPONDENCE SCHOOLS
"The Universal University"
Box 2121-F, Scranton, Penna.

Without cost or obligation, please send me a copy of your booklet, "Who Wins and Why," and full particulars about the subject *before* which I have marked X:

TECHNICAL AND INDUSTRIAL COURSES

☐ Architect
☐ Architectural Draftsman
☐ Building Estimating
☐ Wood Millworking
☐ Concrete Builder
☐ Contractor and Builder
☐ Structural Draftsman
☐ Structural Engineer
☐ Electrical Engineer
☐ Electric Wiring
☐ Electric Lighting
☐ Welding, Electric and Gas
☐ Telegraph Engineer
☐ Telephone Work
☐ Mechanical Engineer
☐ Mechanical Draftsman
☐ Patternmaker
☐ Machinist
☐ Reading Shop Blueprints
☐ Civil Engineer
☐ Highway Engineering
☐ Surveying and Mapping
☐ Gas Engines
☐ Toolmaker
☐ Diesel Engines
☐ Aviation Engines
☐ Bridge Engineer
☐ Automobile Work
☐ Plumbing
☐ Steam Fitting
☐ Heating
☐ Ventilation
☐ Sanitary Engineer
☐ Sheet Metal Worker
☐ Steam Engineer
☐ Marine Engineer
☐ Refrigeration
☐ R. R. Locomotives
☐ Air Brakes
☐ Train Operation
☐ R. R. Section Foreman
☐ R. R. Bridge and Building Foreman
☐ Chemistry ☐ Pharmacy
☐ Coal Mining Engineer
☐ Navigation
☐ Agriculture
☐ Textile Overseer or Superintendent
☐ Cotton Manufacturing
☐ Woolen Manufacturing
☐ Fruit Growing
☐ Radio
☐ Poultry Farming

BUSINESS TRAINING COURSES

☐ Business Management
☐ Industrial Management
☐ Personnel Management
☐ Traffic Management
☐ Accountancy
☐ Cost Accountant
☐ C. P. Accountant
☐ Bookkeeping
☐ Secretarial Work
☐ Spanish ☐ French
☐ Salesmanship
☐ Advertising
☐ Business Correspondence
☐ Lettering Show Cards
☐ Stenography and Typing
☐ Complete Commercial
☐ English
☐ Signs
☐ Civil Service
☐ Railway Mail Clerk
☐ Mail Carrier
☐ Grade School Subjects
☐ High School Subjects
☐ Illustrating
☐ Cartooning
☐ Lumber Dealer

Name...Age.......................

Street Address...

City...State.......................

Occupation...

If you reside in Canada, send this coupon to the International Correspondence Schools Canadian, Limited, Montreal, Canada

Have you ever been in love?

First National Pictures

Of course you have!
And just because of that you're going to get a thrill out of reading
My Love Story
It's a new magazine – vital – alive
and it comes to you with a
Special Introductory offer
25 cents for 3 issues

Stories of life, glamour & romance pack its pages.
Mail a quarter now so you will get the three copies—
P.S.:– My Love Story is offering $100.00 a month for the best brief story of 2,000 words in the first person style (Just a tip)—

My Love Story
155 E. 44th St.,
New York City

FREE

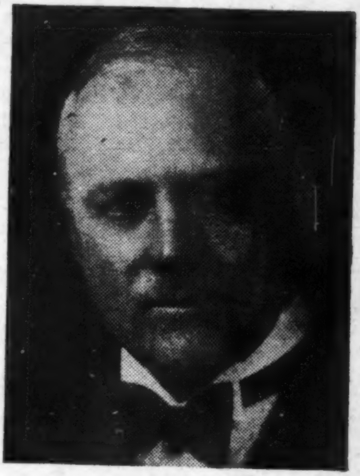
The Road to Understanding *For Men Past 40!*

WHY is 40 the "dread age" for many men? What is the "intimate" disorder that often robs them of vitality, health, joy of living? This daring free book answers these and other vital questions. Mail the coupon for your Free Copy.

WHY are many men past 40 suddenly afflicted with a dangerous ailment, that if neglected, may lead to wretched old age or perhaps grave surgery? The Free book answers this and other questions every man past 40 should know. Mail the coupon now for your free copy of this interesting book.

WHY do so many middle-aged men suffer distressing backache, leg and foot pains, sciatica, bladder trouble, night rising, chronic constipation and other so-called old-age ailments? Find the answer in the Free book. Every man owes it to himself and family to read it.

HOW can one again frequently know the joy of living, get swift, lasting relief and new pep and feel 10 years younger in 7 days? Mail the coupon and learn how an amazing new drugless treatment is used and endorsed by prominent specialists.



The Truth About Prostate Gland Trouble

MANY men mistake these dangerous and distressing ailments for approaching old age and live lives of misery, when by simply restimulating a tiny gland—called the prostate—they might be enjoying vim and health. Already 100,000 men have tested the merits of a new drugless method of gland stimulation perfected by a scientist with offices in Ohio, California and Canada. Now many physicians, specialists, hospitals and sanitariums use and endorse it, for prostate gland failure. It is not a medicine, drug, massage, diet, exercise or violet ray. Its relief is not only usually quick—but lasting. Many users say it cleared up their distressing symptoms and made them feel 10 years younger in 7 days. Now it will be sent to you on a guarantee that if it doesn't do the same for you, pay nothing.

If you want to know the joy of living, mail the coupon for your Free copy of "Why Many Men Are Old at 40."

W. J. KIRK, President,
The Electro Thermal Co.
4860 Morris Ave.
Steubenville, Ohio

If you live West of the Rockies, address The Electro Thermal Co., 500 Wm. Fox Building, Dept. 48-P, Los Angeles, Calif. In Canada, Desk 48-P, 53 Yonge St., Toronto, Can.

WHY MANY MEN ARE OLD at 40
MAIL COUPON NOW . .

W. J. KIRK, President,
The Electro Thermal Co.
4860 Morris Ave., Steubenville, Ohio

Send free copy of your daring book, "Why Many Men Are Old at 40." Also facts about your Free Trial.

Name ....

Address ....

City .... State ....

Santa Fe Smashes!

ALL WATCH PRICES !

And in Addition We Give You

Your Choice of

A Beautiful Blanket
A Diamond Ring or
A Chest of Silver

FREE!

(Thirty Days Only)

With Each Purchase As Explained in Our Sensational Offer Now Ready to Mail! Send Coupon for It NOW!

Our "Direct To You" unheard of low wholesale prices are absolutely at rock bottom, and our special distribution plan will mean huge savings to you. This is all explained in our new catalog just off the press. Send for it at once—don't miss grasping this sensational offer which is startling the country.

We Sell Nationally Advertised Watches, Diamonds and Silverware on Terms and at Prices That Will Astonish You

Think of it! We sell the best jewelry at such prices and on such terms that there is no reason now why you cannot own jewelry which you know is the best, and which you can be proud to own through the years to come.

$3.50 a Month Makes It Easy for You to Own a Valuable Watch or Diamond

We trust the people who buy here, and as a result you can enjoy the pride of owning a really fine watch or diamond while you pay by our special easy "Santa Fe Way." We have removed every obstacle. Send now for our catalog before this offer expires.

Write for Catalog and Beautiful Circular Illustrating Free Gifts

SANTA FE WATCH COMPANY
C-55 Thomas Bldg., Topeka, Kansas

SANTA FE WATCH CO.
C-55 Thomas Bldg., Topeka, Kansas

Please send me the catalog I have checked.

Railroad and Dress Pocket Watches.................. ☐
Ladies' and Men's Wrist Watches.................. ☐
Ladies' and Men's Diamond Rings.................. ☐
Special Circular Illustrating Free Gift.................. ☐

NAME..

ADDRESS..

....

Let me put you in the Movies

Physical Culture Training won me the title "The World's Most Perfect Strong Man" and a contract in the Movies. I have been featured in over 100 pictures; trained many of the famous Hollywood Stars; and placed many of my students in Pictures and on the Stage. Now I'll help you through my home-study Physical Culture Course.

MOVIE CONTRACT GUARANTEED

I'll not only give you a perfect physique and pack your body with all the strength and muscles it can stand, but I'll enter you in my Movie Contest for a FREE TRIP TO HOLLYWOOD AND GUARANTEED MOVIE CONTRACT, as well as many Cash Prizes. If interested in a Movie career, I'll help you personally all I can.

DEVELOP A BODY LIKE MINE IN 90 DAYS

Put yourself in my hands for just 90 days, and I'll fill out your chest until the seams in your clothes rip apart—I'll put muscles on your arms and shoulders that will laugh at loads—I'll make a new man of you, a big, strong HE-MAN, with muscles of steel and the physique of a Greek God. Let me prove it! If over 16, write for my Free Illustrated Book, that tells all about my low-priced Course and famous MOVIE Contest. It costs nothing to investigate. Just write to JOE BONOMO, 280 BONOMO BLDG., HOLLYWOOD, CALIF.

Come to Los Angeles

4 full courses *at price of single course*

For first time in history. National offers complete training in Radio, Electricity, Television, Talking Pictures and Broadcasting—all at price of one single course. Four courses for price of one. Bargain offer for limited time. We train you in four big trades; award life scholarship; help assist you get a job. Individual, practical instruction. Largest and oldest trade school in West. Est. 1905. More than 25,000 graduates.

LEARN TELEVISION-RADIO
ELECTRICITY-TALKING PICTURES and BROADCASTING

RAILROAD FARE ALLOWED

National will allow coach railroad fare to Los Angeles from any point in U. S. Will help you get a job to pay living expenses while learning. Qualify for U. S. Gov't examinations. No dummy equipment. A few delightful months of training and you are qualified. Spend winter in Los Angeles and enjoy countless pleasures while training. We reserve right to withdraw this liberal offer, so mail coupon at once while this bargain offer is still in effect. Free Book gives full details.

NATIONAL RADIO & ELECTRICAL SCHOOL
Including Television, Talking Pictures and Broadcasting
4006 S. Figueroa St., Dept. 1223E, Los Angeles, Cal.
Send Free Book and Special Offer.

Name..

Address........................City........................State........

Revolutionary NEW SUPER-JUICER

Banishes Another Hateful Kitchen Job!..

It's Different
Hangs on the Wall!

Oranges, Lemons, Small Grapefruit Juice Themselves LIKE MAGIC!

At last a new kind of automatic Super-Juicer makes the dream of every housewife come true! Different. Hangs on the wall. Just a turn of the handle and fruits juice themselves instantly. No waste, work, worry or bother. Easy to clean—cannot rust. Priced amazingly low. Agents pocketing the money of their lives. Rush coupon below for UNIQUE LIBERAL NO-RISK TEST OFFER at once!

AGENTS!

Just Turn the Crank and Make Up to $17 IN A DAY Easy!

ALMOST every one today drinks fruit juices for their healthful vitamins. But housewives up to now have had to contend with makeshift gadgets and squeezers—with waste, work, worry, mess and bother. Now comes an astonishing automatic Super-Juicer to bring new kitchen freedom and to provide men and women everywhere with a once-in-a-lifetime money-making opportunity!

Imagine a simple little automatic device that gets all the juice like magic from oranges, lemons, small grapefruits, etc. That hangs on the wall. That does not have to be screwed or clamped to table every time used. Just a turn of the crank and every ounce of rich, pulpy juice is ready to pour. Strains all seeds, pulp and pith. Easy to clean—no parts to rust. Beautifully finished and guaranteed for 5 years. Yet priced amazingly low to sell on sight!

Now 4 Profits on One Sale

Shrewd old-timers and beginners alike are flocking to the SUPER-JUICER in order to cash in on it while it is still brand new and selling fast. Introduced to a waiting world only recently, this amazing new device is already bringing Speedo people everywhere as high as $8 in an hour, $27 in a day and $125 and more in a week! Coupon below brings facts about this and three other equally marvelous devices needed in more than 20 million homes. Get NO-RISK TEST OFFER that guarantees sales. Send no money—just mail the coupon *at once!* **Central States Mfg. Co., Dept. W-6036, 4500 Mary Ave., St. Louis, Mo.**

Easy to Operate

Lifts in and out of the Patented SPEEDO wall bracket. Hangs on the wall. Just a few easy twirls of the handle and fruits juice themselves. So simple a child can do it.

Easy to Clean

Here's a priceless feature. After juice is poured, you simply turn handle to left and rinse the SUPER-JUICER under the faucet. No parts to rust.

No-Risk Test Offer
Simply Mail Coupon NOW!

Central States Mfg. Co., Dept. W-6036,
4500 Mary Ave., St. Louis, Mo.

Rush details of the new SUPER-JUICER NO-RISK TEST OFFER and new 4-Profit Plan.

Name..

Address..

City..State..........

☐ Check here if interested only in one for your home.

IT'S THE *TRAINED MAN* TODAY WHO'S "SITTING ON TOP OF THE WORLD"

LEARN Electricity

by Exclusive Coyne Methods

IN ONLY 90 DAYS

-be a "Trained Man" Yourself!

Everybody knows that training pays! It brings a man better jobs—more pay—a brighter future. But we wanted proof to show you. So we talked to heads of many great industries here in Chicago. Here's what they said, in effect: "Of course trained men will be the first ones hired back now that business is picking up . . . and as far as that's concerned, most of our highly trained men were never let out." No wonder you envy the trained man who is "sitting on top of the world." His seat was never more secure than it is NOW—because he's needed more than ever to carry industry ahead after the Depression. Why don't YOU get the training that will put you "on top of the world" in earnings and opportunities? It's easier than you think!

It's a "cinch" to learn Electricity in these **REAL SHOPS *at* COYNE**

Actual work on A. C. and D. C. Equipment at Coyne.

The Electric Refrigeration Department has all latest Equipment.

Students do actual work in Coyne Construction Department.

PRACTICAL WORK — NOT MERE THEORY

in the GREAT COYNE SCHOOL

The very day you come to Coyne you start learning practically! You build real batteries, wind armatures, work on huge motors, generators, switchboards, auto and airplane motors, giant electric signs, newest model electric refrigerators, power house equipment, etc., and go on frequent inspection trips to the world's greatest electric plants and electrically equipped industrial concerns. Knowledge comes to you in the surest, easiest way—by actually doing. That's why—by the Coyne method developed by the experience of more than a third of a century—you become a master electrician here in a fraction of the time it would take you to learn elsewhere. And the best proof of the value of the training is in the success of Coyne students. We'll gladly show you hundreds and hundreds of letters from men who are making good in the electrical industry who credit Coyne for all their success. You can do as well if you are earnest and want to learn. Get the facts about Coyne immediately.

MANY EARN AS THEY LEARN

Many Coyne students make all or part of their living expenses by spare-time work. We help them find jobs, and go all the way to make their training as economical as it is thorough and practical. We'll do the same for you. Don't let money-shortage keep you from coming to Coyne to get the training that will put you "on top of the world."

Prepare *Now*—Share in the Great Business Revival!

America will beat the Depression—things are already starting! If you act quickly, you can get your training in time. Then you can go ahead with business—and have bigger pay and a sure future before you! This is the most critical period of your life—RIGHT NOW it's up to you whether you are going to make a success or a failure. Send for this FREE BOOK, illustrated with more than 150 pictures, and learn how Coyne training can make you a real success. This book describes the Coyne method—tells a story of provable facts about the opportunities for trained electricians that is more thrilling than an adventure story. Read it—see what others say about Coyne. Get this book N-O-W! It may change the whole course of your life. Clip and mail the Coupon—AT ONCE!

Send for FREE BOOK of FACTS

COYNE ELECTRICAL SCHOOL

H. C. LEWIS, President — Founded 1899
500 S. Paulina St., Dept. 92-66, Chicago, Ill.

H. C. LEWIS, Pres., COYNE ELECTRICAL SCHOOL
500 S. Paulina St., Dept. 92-66, Chicago, Ill.

Dear Mr. Lewis: Send your big FREE BOOK ON ELECTRICITY and your Special Limited Offer. This does not obligate me in any way.

Name...Town...
Street...State...

"Just around the Corner"

An Editorial by Harry Bates

BEING born into a world in which science plays an all-important part in our comfort and enjoyment, we are wont to accept the contributions of the past pilgrims of progress without a full appreciation of the momentous radicalisms of thought in the minds of a comparative few which have lifted our civilization from one restricted plane into another. A casual reflection upon the march of progress through the ages makes at once apparent the up-trend in our store of useful knowledge; but, as the terrain flattens out in the shadow of an airplane gaining altitude, so are the intellectual cliffs and chasms of the past foreshortened into insignificance. What once were barriers of apparently insurmountable height, now in retrospection are referred to as mere stumbling blocks.

All praise to the thousands who have pressed on, profiting by the experience of their predecessors, and who, often through laborious trial and error, have pegged our stock of knowledge at a new high. All praise to the thousands of inventors who have contributed material aids to present comfort and future progress through the utilization of new principles; but immortality be to those who discovered those principles.

To our perception—which can but poorly gauge the perspectives of retreating time—the architectural transition from Greek temples, moulded for beauty, into colossal Roman public buildings, constructed for utility, may appear to be but a smooth and leisurely advance in the process of this man-made evolution. But the process was not so simple, for it depended upon the discovery of a totally new architectural principle, the arch, which, though absurdly simple to us now, was groped for blindly by the artisans of centuries. Whoever was the discoverer is unknown; the "also-rans" who make capital of the genius of another seldom pause to pay tribute to him.

Mention need scarcely be made of those whose daring imagination followed by constancy of purpose proved that the earth is spherical. This was certainly an unorthodox revision to the natural conception of a two-dimensional earth bounded by goodness-knows-what. As in the case of the arch, there was no compromise; the earth was either flat or else it was not; and the situation which seemed perfectly obvious and satisfying, even logical, proved to be utterly fallacious.

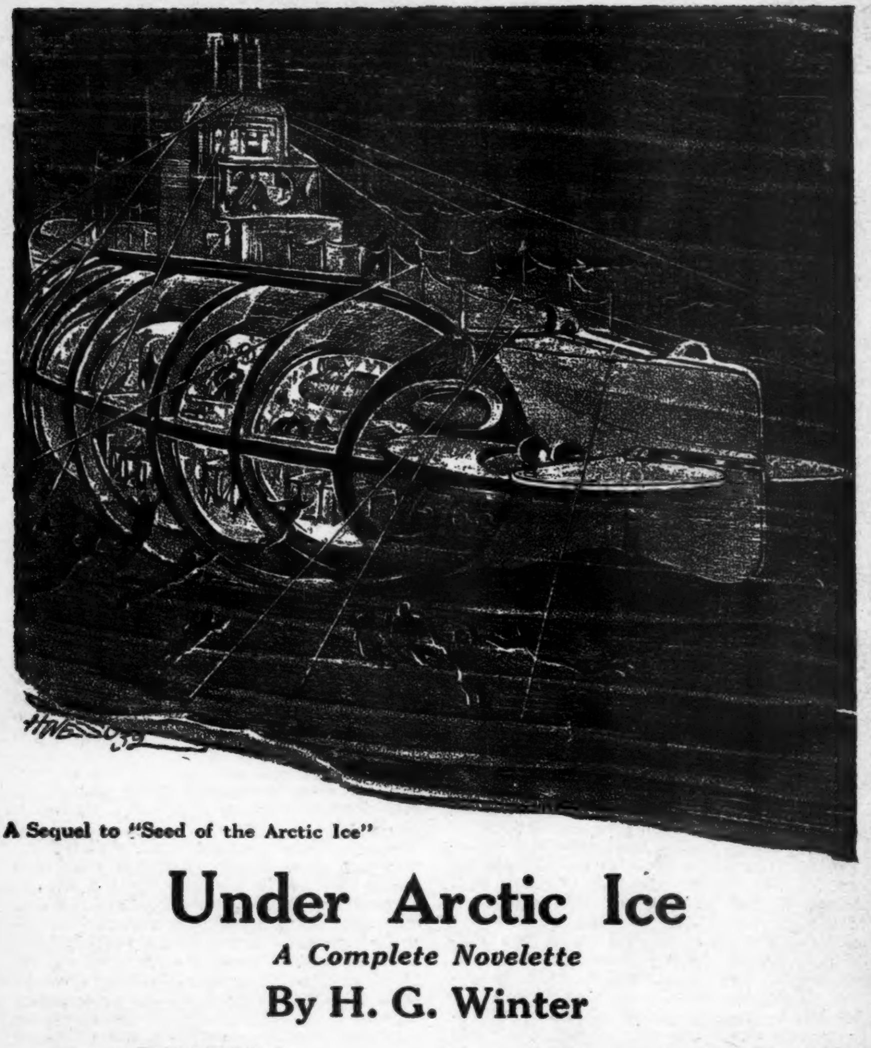
The medieval alchemists, essaying to turn the base metals into fine gold, finally lay down upon the job after contributing no more than two false theories.

The first of these, the "vital theory," would have us believe that compounds of organic origin, such as the chlorophil of plants—while, to be sure, containing elements well known in inorganic nature—are so bound up and pervaded by a "spirit of life" that duplication of them by anyone other than their Creator would be quite impossible. This age-old bugaboo was knocked for a scientific loop by Friedrich Wöhler, who, in 1828, synthesized urea, a truly organic compound, the result of digestion of other truly organic compounds by highly organized animal life. Once this barricade was scaled, a vista into the realms of organic chemistry was disclosed to such men as Sir Henry Perkin, who, at the age of seventeen synthesized a valuable organic purple dye making practical use of the new organic chemistry; to Emil Fischer, who pulled apart, atom from atom, certain highly complex compounds associated with animal life and then built them up again; and to the thousands of others who have proved that Nature's methods may not only be copied but may actually be improved upon. But, in view of the point which we wish to bring out here, Wöhler was the man who rang the bell.

The other alchemic fallacy was the result of an admission of the failure to find the "philosopher's stone" with which to destroy the gold standard. Comparatively modern textbooks in chemistry define the atom as the smallest unit into which matter is divisible, which has as a corollary another untruth, that there is no such thing as the transmutation of the elements. Mme. Curie started procedures against these inaccuracies by the discovery of radio-activity, through which radium disintegrates into other elements more elemental. Since then, Compton has shown that some elements may be changed to others at will by high-powered electronic bombardment.

With the far-reaching and revolutionary discoveries of Einstein new chapters have been added, and numerous corrections been made necessary in every branch of the physical sciences.

And so it goes. The impossible of today becomes the accepted fact of tomorrow. It was glorious to first circumnavigate the globe; who will first set foot on another planet? It was amazing to watch the progress of synthetic chemistry; who will first create genuine life in the test tube? It will be stupendous to explore the wonders of outer space; when will we be led into other, yet unfathomed dimensions? It is all "just around the corner."



A Sequel to "Seed of the Arctic Ice"

Under Arctic Ice

A Complete Novelette

By H. G. Winter

CHAPTER I

An Empty Room

THE house where the long trail started was one of gray walls, gray rooms and gray corridors, with carpets that muffled the feet which at intervals passed along them. It was a house of silence, brooding within the high fence that shut it and the grounds from a landscape torpid under the hot sun of summer, and across which occasionally drifted the lonely, mournful whistle of a train on a nearby railroad. Inside the house there was always a hush, a heavy quiet—restful to the brain.

But now a voice was raised, young, angry, impatient, in one of the gray-walled rooms.

Ken Torrance races Poleward to the aid of the submarine *Peary*, trapped in an icy limbo of avenging sealmen.

"Yes, I rang for you. I want my

bags packed. I'm leaving this minute!"

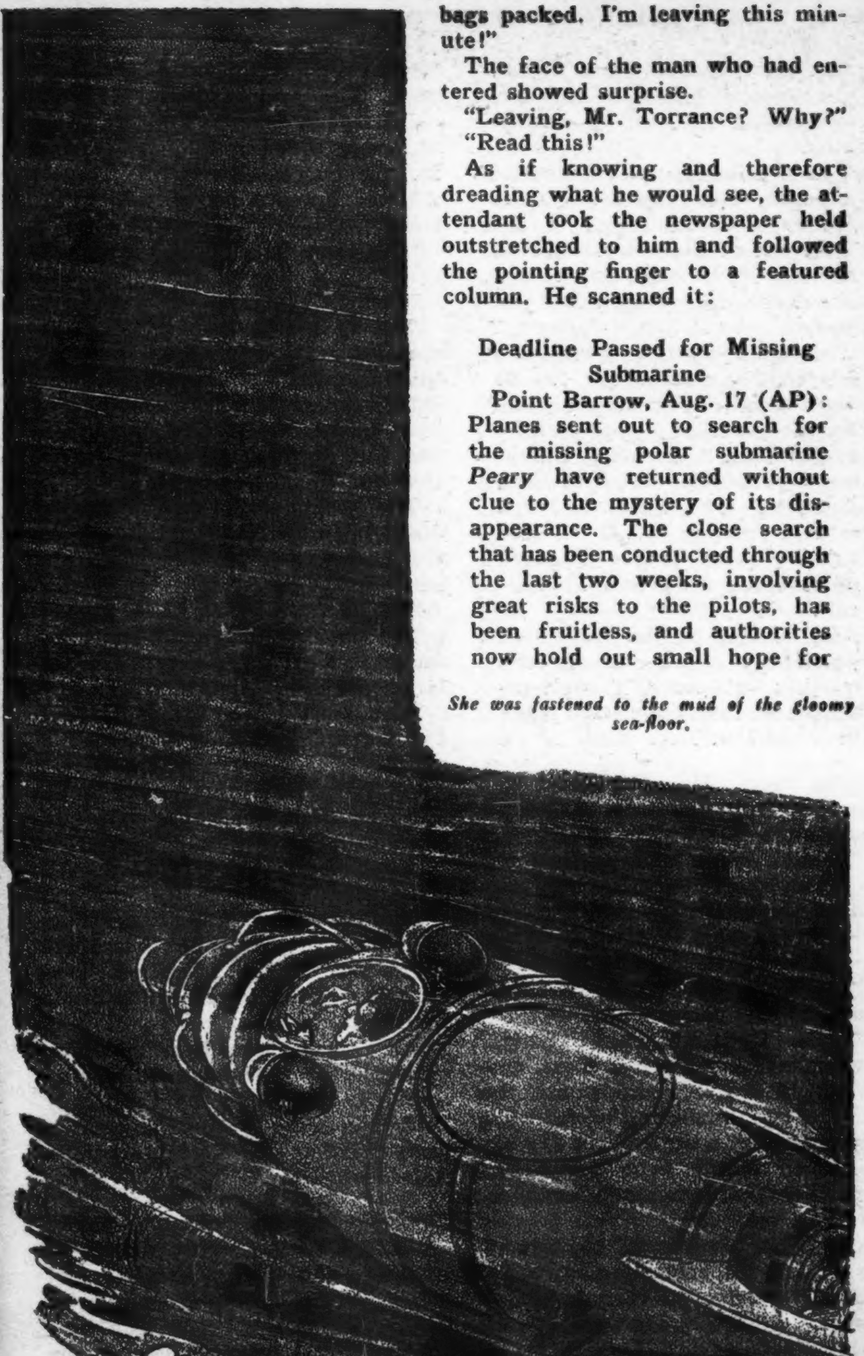
The face of the man who had entered showed surprise.

"Leaving, Mr. Torrance? Why?"

"Read this!"

As if knowing and therefore dreading what he would see, the attendant took the newspaper held outstretched to him and followed the pointing finger to a featured column. He scanned it:

> Deadline Passed for Missing Submarine
>
> Point Barrow, Aug. 17 (AP): Planes sent out to search for the missing polar submarine *Peary* have returned without clue to the mystery of its disappearance. The close search that has been conducted through the last two weeks, involving great risks to the pilots, has been fruitless, and authorities now hold out small hope for



She was fastened to the mud of the gloomy sea-floor.

Captain Sallorsen, his crew and the several scientists who accompanied the daring expedition.

If the *Peary*, as is generally thought, is trapped beneath the ice floes or embedded in the deep silt of the polar sea-floor, her margin of safety has passed the deadline, it was pointed out to-day by her designers. Through special rectifiers aboard, her store of air can be kept capable of sustaining life for a theoretical period of thirty-one days. And exactly thirty-one days have now elapsed since last the *Peary's* radio was heard from a position 72° 47′ N, 162° 22′ W, some twelve hundred miles from the North Pole itself.

In official circles, hope was practically abandoned for the missing submarine, though attempts will continue to be made to locate her. . . .

"I'm sorry, Mr. Torrance," said the attendant nervously. "This paper should—"

"Should never have reached me, eh? Through some slip of the people who censor my reading matter here, I read what I wasn't supposed to—that's what you mean?"

"It was thought better, Mr. Torrance, by the doctors, and—"

"Good God! Thought better! Through their sagacity, these doctors have probably condemned the men on this submarine to death! I haven't heard a word about the expedition; didn't even know the *Peary* was up there, much less missing!"

"Well, Mr. Torrance," the attendant stammered, more and more unsettled, "the doctors thought that—that any news about it would—well, upset you."

The young man laughed bitterly. "Bring on my old 'trouble,' I suppose. The doctors have been considerate, but I won't concern them any more. I'm through. I'm leaving for the north—right now. There's a bare chance I might still be in time."

"I'm sorry, Mr. Torrance, but you can't."

"Can't?"

The attendant had retreated to the door. His eyes were nervous, his face pale.

"It's orders, Mr. Torrance. You've been under observation treatment, and the doctors left strict orders that you must stay."

The young man throbbed with dangerous anger. His hands clenched and unclenched. He burst out, in a last attempt at reason:

"But don't you see, I've *got* to get to the *Peary!* It's the last hope for those men! The position she was last heard from is right where I—"

"You can't leave, Mr. Torrance! I'm sorry, but I'll have to call a guard!"

For a minute their eyes held. With an effort, the young man said more calmly:

"I see. I see. I'm a prisoner. All right, leave me."

The attendant was more than willing. The young man heard the door's lock click. And then he lowered his head and pressed his hands hard into his face.

But a second later he was looking up again, at the single wide window which gave out on the lonely landscape over which sometimes came drifting the distant cry of a train's whistle.

TWO months before, Kenneth Torrance had returned to the whaling submarine *Narwhal*, of which he was first torpooner, with a confused story of men who were half-seals that lived in mounds under the Arctic ice,* who had captured him and—he found—had also captured the second torpooner, Chanley Beddoes. In breaking free from their mound-prison, Beddoes had killed one of the sealmen and had been himself slain minutes later by a killer whale, one of the fierce scavengers of the sea which the sealmen trapped for food even as the *Narwhal* sought them for oil. Ken Torrance alone came back.

---

*See the February, 1932, issue of Astounding Stories.

Over their doubts, he had stuck to his story. Later, he had repeated it to officials of the Alaska Whaling Company, who worked the submarine and several surface ships. They in return had sent him to a private sanitarium in the State of Washington for a rest which they hoped would "iron out the kink" in his brain.

Here Ken had been for six weeks, while the exploring submarine *Peary* nosed her way northward toward the Pole. Here he had been, all unknowing, while the world hummed with reports of the *Peary's* disappearance in that far-off ever-shrouded sea of mystery

She might, Ken knew, have struck a shaft of underwater ice, sending her to the bottom; some of her machinery might have cracked up, paralyzing her; the ice-fields under which she cruised might have shifted suddenly, crushing her ribs—of these perils the world knew as well as he. But the submarine's crew was prepared for them; the *Peary* was equipped with a circular saw for cutting up through the ice from beneath, and she carried sea-suits which would allow her men, if she were wrecked on the bottom, to leave her and get up on the ice and wait for the first searching plane.

Why, then, had not the planes which scoured the region found the survivors?

That was the mystery—but not to Ken Torrance. There was another peril, of which he alone knew. Not far from where the *Peary's* last radio report had come, a group of hollowed-out mounds lay on the sea-floor, swarming with brown-skinned, quick-swimming creatures. Sealmen, they were—men who, like the seals, had gone back to the sea. Months ago, Second Torpooner Chanley Beddoes had killed one of them. They were intelligent; they could remember; they were capable of hate and fear; they would be desirous of leveling the debt!

There, Ken felt sure, lay the reason for the *Peary's* baffling silence, for the non-appearance of her men.

There might still be time. No one of course would listen to him and believe, so he would have to go in search of the *Peary* and her crew himself.

Standing by the window, Kenneth Torrance quickly planned the several steps which would take him to the Arctic and its silent ice-coated sea.

And when, some two hours later, after a short warning rap on the door, the individual who served as Mr. Torrance's attendant entered his room, he was confronted, not by the gentleman whose dinner he carried, but by an empty room, a stripped bed, an open window, and a rope of sheets dangling from it toward the ground two stories beneath.

That was at seven o'clock in the evening.

CHAPTER II

The Crash

AT a few minutes before eight o'clock, Air Mail Pilot Steve Chapman was enjoying a quiet cigarette while waiting for the mechanics to warm up the five hundred horses of his mail plane satisfactorily. Halfway through, he heard, from behind, a quick patter of feet, and, turning, he observed a figure clad in flannel trousers and sweater. The cigarette dropped right out of his mouth as he cried:

"Ken! Ken Torrance!"

"Thank God you're here!" said Kenneth Torrance. "I gambled on it. Steve, I've got to borrow your own personal plane."

"What?" gasped Steve Chapman. "What—what—?"

"Listen, Steve. I haven't been with the whaling company lately; been resting, down here—secluded. Didn't know that submarine, the *Peary,* was missing. I just learned. And I know damned well what's happened to it. I've got to get to it, quick as I can, and I've got to have a plane."

Steve Chapman said rather faintly:

"But—where was the *Peary* when they last heard from her?"

"Some twelve hundred miles from the Pole."

"And you want to get there in a plane? From here?"

"Must!"

"Boy, you stand about one chance in twenty!"

"Have to take it. Time's precious, Steve. I've got to stop in at the Alaska Whaling Company's outpost at Point Christensen, then right on up. I can't even begin unless I have a plane. You've got to help me on my one chance of bringing the *Peary's* men out alive! You'll probably never see the plane again, Steve, but—"

"To hell with the plane, if you come through with yourself and those men," said the pilot. "All right, kid, I don't get it all, but I'm playing with you. You're taking my own ship."

He led Ken to a hangar wherein stood a trim five-passenger amphibian; and very soon that amphibian was roaring out her deep-throated song of power on the line, itching for the air, and Steve Chapman was shouting a few last words up to the muffled figure in the enclosed control cockpit.

"Fuel'll last around forty hours," he finished. "You'll find two hundred per, easy, and twenty-five hours should take you clear to Point Christensen. I put gun and maps in the right pocket; food in that flap behind you. Go to it, Ken!"

Ken Torrance gripped the hand outstretched to his and held it tight. He could say nothing, could only nod—this was a real friend. He gave the ship the gun.

Her mighty Diesel bellowed, lashed the air down and under; the amphibian spun her retractable wheels over the straight hard ground until they lifted lightly and tilted upward in a slow climb for altitude. With fiery streams from the exhaust lashing her flanks, she faded into the darkness to the north.

"Well," murmured Steve Chapman, "I've got her instalments left, anyway!" And he grinned and turned to the mail.

THAT night passed slowly by; and the next day; and all through night and day the steady roar of beating cylinders hung in Kenneth Torrance's ears. At last came Point Christensen and a descent; sleep and then quick, decisive action; and again the amphibian rose, heavily loaded now, and droned on toward the ice and the cold bleak skies of the far north. On, ever on, until Point Barrow, Alaska's northernmost spur, was left behind to the east, and the world was one of drifting ice on gray water. Muscles cramped, mind dulled by the everlasting roar, head aching and weary, Ken held the amphibian to her steady course, until a sudden wind shook her momentarily from it.

A rising wind. The skies were ugly. And then he remembered that the men at Point Christensen had warned him of a storm that was brewing. They'd told him that he was heading into disaster; and their surprised, rather fearful faces appeared before him again, as he had seen them just before taking off, after he had told them where he was going.

Of course they'd thought him crazy. He had brought the amphibian down in the little harbor off the whaling company's base, gone ashore and greeted his old friends. There was only a handful of men stationed there; the *Narwhal* was being overhauled in a shipyard at San Francisco, and it wasn't the season for surface whalers. They knew that he, Ken, had been put in a sanitarium; all of them had heard his wild story about sealmen. But he concocted a plausible yarn to account for his arrival, and they had fed him and given him a berth in the bunkhouse for the night.

For the night! Ken Torrance grinned as he recalled the scene. In the middle of the night he had risen, quickly awakened four of the sleeping men, and with his gun forced them to take a torpoon from the outpost's storehouse and put it inside the amphibian's passenger compartment.

It was robbery, and of course they'd thought him insane, but they didn't dare cross him. He had told them cheerfully he was going after the *Peary*, and that if they wanted the torpoon back they were to direct the searching planes to keep their eyes on the place where the submarine was last heard from. . . .

KEN came back to the present abruptly as the plane lurched. The wind was getting nasty. At least he did not have much farther to go; an hour's flying time would take him to his goal, where he must descend into the water to continue his search. His search! Had it been, he wondered, a useless one from the start? Had the submarine's crew been killed before he'd even read of her disappearance? If the sealmen got them, would they destroy them immediately?

"I doubt it," Ken muttered to himself. "They'd be kept prisoners, in one of those mounds, like I was. That is, if they haven't killed any of the creatures. It hangs on that!"

An hour's time, he had reckoned; but it was more than an hour. For soon the world was blotted out by a howling dervish of wind and driven snow that time and time again snatched the amphibian from Ken's control and hurled it high, or threw it down like a toy toward the inferno of sea and ice he knew lay beneath. He fought for altitude, for direction, pitched from side to side, tumbled forward and back, gaining a few hundred feet only to feel them plucked breathtakingly out from under him as the screaming wind played with him.

Now and again he snatched a glance at the torpoon behind. The gleaming, twelve-foot, cigar-shaped craft, with its directional rudders, propeller, vision-plate and nitro-shell gun lay safely secured in the passenger compartment, a familiar and reasurring sight to Ken, who, as first torpooner of the *Narwhal*, had worked one for years in the chase for killer whales. Soon, it seemed, he would have to depend on it for his life.

For all the Diesel's power, it was not enough to cope with the dead weight of ice which was forming over the plane's wings and fuselage. He could not keep the altimeter up. However he fought, Ken saw that finger drop down, down—up a trifle, quivering as the racked plane quivered—and then down and down some more.

He saw that the plane was doomed. He would have to abandon it—in the torpoon—if he could.

He was some thirty miles from his objective. The sea beneath would be half hidden under ragged, drifting floes. In fair weather he could have chosen a landing space of clear water, but now he could not choose. The altitude dial said that the water was three hundred feet beneath, and rapidly rising nearer.

A margin of seconds in which to prepare! Ken locked the controls and scrambled back into the passenger compartment. Steadying himself on the bucking floor, he opened the torpoon's entrance port and slid in; quickly he locked the port and strapped the inner body harness around him; and then he waited.

Now it was all chance. If the plane crashed into clear water, he was safe; but if she hit ice. . . . He put that thought from him.

The locked controls held the amphibian for perhaps thirty seconds. Then with a scream the storm-giant took her. A mad up-current of wind hurled her high, whirled her dizzily, toyed with her—and then she spun and dove. Down, down, down; down with a speed so wild Ken grew faint; down through the core of a maelstrom of snow till she crashed.

Kenneth Torrance knew a sudden shaking impact; for an instant there was uncertainty; and then came all-pervading quiet. . . .

CHAPTER III

The Fate of the Peary

QUIET, and utter, liquid darkness.

Liquid! Around him Ken heard a gurgling, at first loud and close, then subsiding to a low whispering of currents. The amphibian had hit water.

Gone in an instant was the shriek and fury of the storm, and in its place the calm, slow-heaving silence of underwater. The plane was shattered in a dozen places, but the torpoon had easily stood it.

Ken turned to action. He switched on the torpoon's dashboard lights and twin bow-beams, and saw that the shell was wedged in the fuselage. The plane was apparently entirely under the surface, and her interior filled with water.

Holding the propeller in neutral, he revved up the powerful electric motor. Then he bit the propeller in, slowly. The torpoon nudged back for inches. Then, throwing the gear into forward, Ken gave her full speed. The torpoon leaped ahead, crunched through the weakened corner ahead and was free.

It was a world of drab tones that she came into. Down below was impenetrable blackness, shading softly overhead into blue-gray which was mottled by lighter areas from breaks in the floes above. All was calm. There was no sign of life save for an occasional vague shadow that, melting swiftly away, might have been a fish or seaweed. Placid always, would be this shrouded sea of mystery, no matter what furious tempest raged above over the flat leagues of ice and water.

But the seeming peacefulness was but a mask for danger. Kenneth Torrance's face was set in sober lines as he sped the slim torpoon northward, her bow lights shafting long white fingers before her. For now there was only one path—and that lay ahead. He could not turn back. Storm and water had destroyed the plane that could take him back to land. He could not possibly reach any outpost of civilization in the torpoon, for her cruising radius was only twenty hours. He had planned to land the amphibian on the ice above the spot where the *Peary* had disappeared, then find a break in the ice and slide down below in the torpoon on his quest—to return to the plane if it proved fruitless. But now there was no retreat. It was succeed, or die.

And with that realization a more

dreadful thought flashed into his mind. All those men, of the whaling company and the sanitarium, thought him a little crazy. And, since lunatics are always convinced of the reality of their visions, what if the sealmen—his adventure amidst them—had been but a dream, a nightmare, an hallucination? What if he *were* in truth crazy? The fear grew rapidly. What if he were? God! He, hunting for the *Peary*, when all those planes and men had failed! He, expecting to achieve what those searchers, with far greater resources, had not been able to! Did not that give evidence that his mind was twisted? Creatures, half-seal, half-men, living under the ice—it certainly seemed a lunatic's obsession.

Then something within him rose and fought back.

"No!" he cried aloud. "I'll go bugs if I think like that! Those sealmen were real—and I know where they are. I'm going on!"

And, an hour later, the dashboard's shaded dials told him he was on the exact spot where the *Peary* had last reported. . . .

HERE was the real Arctic, the real polar sea. No sun, no breath of the world above could reach it through its eternal mask of solid ice. As one of the few unfamiliar aspects of the earth, it was as far removed from the imagination of man as if it were part of a far planet hung spinning millions of miles out in space. Men could reach it in shells of metal, but it was not meant for him, and was always hostile. A dozen times a daring one could cross safely its cold lonely reaches, but the thirteenth time it would snare and destroy him for the unwanted trespasser he was.

It was here that the *Peary* had stepped off into mystery. At this point her hull had throbbed with air, movement, life; at this point all had been well. And then, minutes or hours later, close to here, the sea devil had sprung.

What had happened? What had trapped her? What, even more baffling, had kept her men with their manifold safety devices from even reaching and climbing up on the ice above to signal the searching planes?

Ken Torrance, oppressively alone in the hovering torpoon, gazed through its vision-plate of fused quartz around him. Gray sea, filtering to black beneath; distant, eery shadows, probably meaning nothing, but possibly all important; ceiling of thick ice above, rough and in places broken by a sharp down-thrusting spur—these were his surroundings. These were what he must hunt through, until he came upon the crumpled remnant of a submarine, or the murky, rounded hillocks which gave habitation to the creatures he suspected of capturing that submarine's crew.

HE began the search systematically. He angled the torpoon down to a position halfway between sea-floor and ice-ceiling, then swung her in an ever-widening circle. Soon his orbit had a diameter of a half-mile; then a mile; then two.

The torpoon slipped through the water at full speed, her light-beams like restless antennae, now stabbing to the right to dissolve a formless shadow, now to the left to throw into blinding white relief a school of half-transparent fish which scurried with frantic wrigglings of tails from the glare, now slanting up to bathe the cold glassy face of an inverted ice-hill, now down to dig two white holes in the deeper gloom.

Ken continued this routine for hours. Steadily and low the electric motor droned in the ears of the watchful pilot, and the stubby propeller's blades flashed round in a blur of speed between the slightly slanted rudders. Somewhere, miles away, a splintered amphibian plane was slipping down to her last landing, and above, perhaps, the white hell of storm which had brought her low still howled over the trackless wastes; but here were only shadows and shifting gloom, straining the alert eyes to soreness and tensing the watcher's brain with alarms that, one after another, were only false.

Until at last he found her.

Immediately he shut off all his lights. He no longer needed them. Far in the distance, and below, wavered a faint yellow glow. It was no fish; it could mean only one thing—the lights of a submarine,

And lights meant life! There would be none burning in a deserted submarine. His heart beat fast and his tight, sober lips widened in a quick grin. He had found the *Peary!* And found her with some life still aboard her! He was in time!

So Ken rejoiced while he slid the torpoon down to a level just a few feet above the silty sea bottom, reducing her to quarter-speed. There was an urge inside him to switch on his bow-beams, reach them out toward the submarine's hull to tell all within that help was at last at hand; he wanted to send the torpoon ahead at full speed. But caution restrained him to a more deliberate course. He was in the realm of the sealmen, and he did not wish to attract the attention of any. So he advanced like a furtive shadow slinking along the dark sea-bottom, deep in the covering gloom.

Nearer and nearer, while the distant blur of yellow light grew. Nearer and nearer to the long-trapped men, while the consciousness that he had succeeded intoxicated him. He alone had found them! Sealmen or no sealmen, he had found the *Peary!* And found her with lights lit and life inside! Nearer and nearer. . . .

And then suddenly Ken halted the torpoon and stared with wide, alarmed eyes. For the submarine was now plainly visible in detail —and he saw her real plight and with it knew the answer to the mystery of her long silence and the non-appearance of her men on the ice field above.

THE *Peary* was a spectacle of fantastic beauty. It was as if a huge, rounded piece of amber, mellow, golden, lay in the murk of the sea-floor. Not steel, hard and grim, but of transparent, shimmering stuff she was built, all coated a soft yellow by her lights, clearly visible inside. Ken had known something of her radical construction; knew that a substance called quarsteel, similar to glass and yet fully as tough as steel, had been used for her hull, making her a perfect vehicle for undersea exploration. Her bow was capped with steel, and her stern, propellers, diving rudders; her port-locks, for the releasing of torpoons, were also of steel, as were the struts that braced her throughout—but the rest was quarsteel, glowing and golden as the heart of amber.

Beautiful with a wild yet scientific beauty was the *Peary*, but she was not free. She was trapped. She was fastened to the mud of the gloomy sea-floor.

Ropes held her down; and Ken Torrance knew those ropes of old. They were tough and strong, woven of many strands of seaweed, and twenty or thirty of them striped the *Peary's* two hundred feet of hull. Unevenly spaced, stretched clear over the ship from one side to the other, they were caught around her up-jutting conning tower, fastened through her rudders, and holding tight in a score of places. They held the submarine down despite all the buoyancy of her emptied tanks and the power of her twin propellers.

And the sealmen swam around her.

RESTLESS dark shadows against the golden hull, they wavered and darted and poised, totally unafraid. Another in Kenneth Torrance's place would have put them down as some strange school of large seals, inordinately curious but nothing more; but the torpooner knew them as men—men remodeled into the shape of seals; men who, ages ago, had forsaken the land for the old home of all life, the sea; who, through the years, had gradually changed in appearance as their flesh had become coated with layers of cold-resisting blubber; whose movements had become adapted to the water; whose legs and arms had evolved into flippers; but whose heads still harbored the now faint spark of intelligence that marked them definitely as men.

Emotions similar to man's they had, though dulled; friendliness, curiosity, anger, hate, and—Ken knew and feared—even a capacity for vengeance. Vengeance! An eye for an eye, tooth for a tooth—the old law peculiar to man! Chanley Beddoes had slain one of them; if only the *Peary's* crew had not killed more! If only that, there might be hope!

First he must get inside the submarine. Warily, like a stalking cat, Ken Torrance inched the torpoon toward the great shining ship. At least he was in time. Within her he could see figures, most of them stretched out on the decks of her different compartments, but one of whom occasionally moved—slowly. He understood that. For weeks now the *Peary* had lain captive, and her air had passed beyond the aid of rectifiers. Tortured, those survivors inside were, constantly struggling for life, with vitality ever sinking lower. Some might already be dead. But at least he could try to save the rest.

He approached her from one side of the rear, for in the rear compartment were her two torpoon port-locks. The one on his side was empty, its outer door open. The torpoon it had held had been sent out, probably for help, and had not returned. It provided a means of entrance for him.

At perhaps a hundred feet from the port-lock, Ken halted again. His slim craft was almost indistinguishable in the murk; he felt reasonably safe from discovery. For minutes he watched the swarming sealmen, waiting for the best chance to dart in.

IT was then, while studying the full length of the submarine more closely, that he saw that one compartment of her four was filled with water. Her steel-caped bow had been stove in. That, he conjectured, had been the original accident which had brought her down. It was not a fatal accident in itself, for there were three other compartments, all separated by watertight bulkheads, and the flooded one could be repaired by men in sea-suits—but then the sealmen had come and roped her down where she lay. Some of the creatures, he saw, were actually at that time inside the bow compartment, swimming around curiously amidst the clustered pipes, wheels and levers. It was a weird sight, and one that held his eyes fascinated.

But suddenly, through his absorption, danger prickled the short hairs of his neck. A lithe, sinuous shadow close ahead was wavering, and large, placid brown eyes were staring at him. A sealman! He was discovered! And instinctively, immediately, Ken Torrance brought the torpoon's accelerator down flat.

The shell jumped ahead with whirling propeller. The creature that had seen him doubled around and sped in retreat. In brief snatches, as the torpoon streaked across the hundred-foot gap to the empty port-lock, Ken glimpsed his discoverer gathering a group of its fellows, and saw brown-skinned bodies swarm after him with nooses of seaweed-rope—and then the great transparent side wall of the *Peary* was before him, and the port-locks dark opening. Ken threw his motor into reverse, slid the torpoon slightly to one side, and there was a jerk, a jar, and a sensation of something moving behind.

He turned to see the port-lock's outer door closing, actuated by controls inside the submarine—and just in time to shut out the first of his pursuers. Then the port-lock's pumps were draining the water from the chamber, and the inner door clicked and opened.

Kenneth Torrance climbed stiffly from the torpoon to enter the interior of the long-lost and besieged exploring submarine *Peary*.

CHAPTER IV

"No Chance Left"

HIS entrance was an unpleasant experience. He had forgotten the condition of the air inside the submarine, and what its effect on him, coming straight from comparatively good and fresh air, would be, until he was seized by a sudden choking grip around his throat. He reeled and gasped, and was for a minute nauseated. Lights flashed around him, and teetering backward he leaned weakly against some metal object until gradually his head cleared; but his lungs remained tortured, and his breathing a thing of quick, agonized gulps.

Then came sounds. Figures appeared before him.

"From where—" "Who are you?" "What—what—what—" "How did you?"

The half-coherent questions were couched in whispers. The men around him were blear-eyed and haggard-faced, their skins dry and bluish, and not a one was clad in more than undershirt and trousers. Alive and breathing, they were—but breathing grotesquely, horribly. They made awful noises at it; they panted, in quick, shallow sucks. Some lay on the deck at his feet, outstretched, without energy enough to attempt to rise.

Beautiful and amber-like the submarine had appeared from outside, but inside that effect was lost. There were the usual appurtenances: a maze of pipes, wheels, machinery, all silent now, and cold; here were the two port-locks for torpoons; the emergency steering controls; the small staterooms of the *Peary's* officers. Looking forward, still striving for complete clear-headedness and normality, Ken could see the two intact forward compartments, silent and apparently lifeless, with dim lamps burning. They ended with the watertight bulkhead which stood between them and the flooded bow compartment.

Ken at last found words, but even his short query cost a sickening effort.

"Where's—the commander?" he asked.

A MAN turned from where he had been leaning against a nearby wheel control. He was stripped to the waist. His tall body was stooped, and the skin of his ruggedly cut face drawn and parchment-like. His face had once been dignified and authoritative, but now it was that of a man who nears death after a long, bitter fight for life. The smile which he gave to Ken was painful—a mockery.

"I am," he said faintly. "Sallorsen. Just wait, please. A minute.

I worked port-lock. Breath's gone. . . ."

He sucked shallowly for air and let his smile go. And standing there beside him, gazing at the worn frame, Ken felt strength come back. He had just entered; this man and the others had been here for weeks!

"I'm Sallorsen," the captain went on at last. All his words were clipped off, to cost minimum effort. "Glad you got through. Afraid you've come to prison, though."

"No!" Ken said emphatically. He spoke to the captain, but what he said was also for all the others grouped around him. "No, Captain! I'm Kenneth Torrance. Once torpooner with Alaska Whaling Company. They thought me crazy—crazy—'cause I told about sealmen. Put me in sanitarium. I knew they had you—when—heard you were missing." He pointed at the brown-skinned creatures that custered close around the submarine outside her transparent walls. "I got free and came. Just in time."

"In time? For what?"

Another voice gasped out the question. Ken turned to a broad-shouldered man with a ragged growth of beard that had been a trim Van Dyke; and before the torpooner could answer, Sallorsen said:

"Dr. Lawson. One of our scientists. In time for what?"

"To get you and the submarine free," said Ken.

"How?"

KEN paused before replying. He gazed around—out the side walls of glistening quarsteel into the sea gloom, into the thick of the smooth, lithe, brown-skinned shapes that now and again poised pressing against the submarine, peering in with their liquid seal's eyes. Dimly he could see the taut seaweed ropes stretching down from the top of the *Peary* to the sea-bottom. It looked hopeless, and to these men inside it *was* hopeless. He knew he must speak in confident, assured tones to drive away the uncaring lethargy holding them all, and he framed definite, concise words with which to do it.

"These creatures have caught you," he began, "and you think they want to kill you. But look at them. They seem to be seals. They're not. They're men! Not men like us—half-men—sealmen, rather—changed into present form by ages of living in the water. I know. I was captured by them once. They're not senseless brutes; they have a streak of man's intelligence. We must communicate with that intelligence. Must reason with them. I did once. I can do it again.

"They're not really hostile. They're naturally peaceful; friendly. But my friend—dead now—killed one of them. Naturally they now think all creatures like us enemies. That's why they trapped your sub.

"They think you enemies; think you want to kill them. But I'll tell them—through pictures, as I did once before—that you mean them no harm. I'll tell them you're dying and must have air—just as they must. I'll tell them to release submarine and we'll go away and not disturb them again. Above all I must get across that you wish them no harm. They'll listen to what my pictures will say—and let us go—'cause at heart they're friendly!"

HE paused—and with a ghastly, twisted smile, Captain Sallorsen whispered:

"The hell you say!"

His sardonic comment brought a sudden chill to Kenneth Torrance. He feared one thing that would render his whole value useless. He asked quickly:

"What have you done?"

"Those seals," Sallorsen's labored voice continued "—they've killed eight of us. Now they're killing all."

"But have you killed any of them?" Breathless, Ken waited for the answer he feared.

"Yes. Two."

The men were all staring at Ken, so he had to hide the awful dejection which clamped his heart. He only said:

"That's what I feared. It changes everything. No use trying to reason with them now." He fell silent. "Well," he said at last, trying to appear more cheerful, "tell me what happened. Maybe there's something you've overlooked."

"Yes," Sallorsen whispered. He started to come forward to the torpooner, but stumbled and would have fallen had not Ken caught him in time. He put one of the captain's arms around his shoulder, and one of his own around the man's waist.

"Thanks," Sallorsen said wryly. "Walk forward. Show you what happened."

THERE were men in the second compartment, and they still fought to live. From the narrow seamen's berths that lined the walls came the sound of breathing even more torturous than that of the men in the rear. In the single bulb's dim light Ken could see their shapes stretched motionlessly out, panting and panting. Occasionally hands reached up to claw at straining necks, as if to try and rid throats of strangling grasps. Two figures had won free from the long struggle. They lay silent and still, the outline of their dead bodies showing through the sheets pulled over them.

Slowly Sallorsen led Ken through this compartment and into the next, which was bare of men. Here were the ship's main controls—her helm, her central multitude of dials, levers and wheels, her televisiscreen and old-fashioned emergency periscope. A metal labyrinth it was, all long silent and inactive. Again the weird contrast struck Ken, for outside he could still see the scene of vigorous, curious life that the sealmen constituted. Close they came to the submarine's sheer walls of quarsteel, peering in stolidly, then flashing away with an effortless thrust of flippers, sometimes for air from some break in the surface ice.

Like men, the sealmen needed air to live, and got it fresh and clean from the world above. Inside, real men were gasping, fighting hopelessly, yielding slowly to the invisible death that lay in the poisonous stuff they had to breathe. . . .

Ken felt Sallorsen nudge him. They had come to the forward end of the control compartment, and could go no farther. Before them was the watertight door, in which was set a large pane of quarsteel. The captain wanted him to look through.

Ken did so, knowing what to expect; but even so he was surprised by the strangeness of the scene. In among the manifold devices of the front compartment, its wheels and pipes and levers, glided slowly the sleek, blubbery shapes of half a dozen sealmen. Back and forth they swam, inspecting everything curiously, unhurried and unafraid; and as Ken stared one of them came right up to the other side of the closed watertight door, pressed close to the pane and regarded him with large placid eyes.

Other sealmen entered through a jagged rip in the plates on the starboard side of the bow. At this Sallorsen began to speak again in the short, clipped sentences, punctuated by quick gasps for air.

"CRASHED, bow-on," he said. "Underwater ice. Outer and inner plates crumpled like paper.

Lost trim and hit bottom. Got this door closed, but lost four men in bow compartment. Drowned. No chance. Sparks among 'em, at his radio. That's why we couldn't radio for help." He paused, gasping shallowly.

"Could've got away if we'd left immediately. One flooded compartment not enough to hold this ship down. But I didn't know. I sent two men out in sea-suits—inspect damage. Those devils got them.

"The seal-things came in a swarm. God! Fast! We didn't realize. They had ropes, and in seconds they'd lashed us down to the sea-floor. Lashed us fast!" Again he paused and sucked for the poisoned air, and Ken Torrance did not try to hurry him, but stood silent, looking forward to the smashed bow, and out the sides to where he could see the taut black lines of the seawood ropes.

"The two men put up fight. Had crowbars. Useless—but they killed one of the devils. That did it. They were torn apart in front of us. Ripped. Mangled. By spears the things carry. Dead like that."

"Yes," murmured Ken, "that would do it. . . ."

"I quick tried to get away," gasped Sallorsen. "Full-speed—back and forth. No good. Ropes held. Couldn't break. All our power couldn't! So then—then I acted foolishly. Damn foolish. But we were all a little crazy. A nightmare, you know. Couldn't believe our eyes—those seals outside, mocking us. So I called for volunteers. Four men. Put 'em in sea-suits, gave 'em shears and grappling prongs. They went out.

"They went out laughing—saying they'd soon have us free! Oh, God!" It seemed he could not go on, but he forced the words out deliberately. "Killed without a chance! Ripped apart like the others! No chance! Suicide!"

Ken felt the agony in the man, and was silent for a while before quietly asking:

"Did they kill any more of the sealmen?"

"One. Just one. That made two of them—six of us. What the hell are the rest of them waiting for?" Sallorsen cried. "They killed eight in all! To our two! That's enough for them, isn't it?"

"I'm afraid not," said Ken Torrance. "Well, what then?"

"Sat down and thought. Carefully. Hit on a plan. Took one of our two torpoons. Lashed on it steel plates, ground to sharp cutting edges. Spent days at it. Thought torpoon could go out and cut the ropes. Haines volunteered and we shot him and torpoon out."

"They got the torpoon?" Ken asked.

Sallorsen's arm raised in a pointing gesture. "Look."

SOME fifty feet away from the *Peary,* on the side opposite to the one Ken Torrance had approached, a dimly discernible object lay in the mud. In miniature, it resembled the submarine: a cigar-shaped steel shell, held down to the sea-bottom by ropes bound over it. Cutting edges of steel had been fastened along its length.

"I see," said Ken slowly. "And its pilot?"

"Stayed in the torpoon thirty-six hours. Then went crazy. Put on sea-suit and tried to get back here. Whisk—they got him. Killed and mangled while we watched!"

"But didn't his torpoon have a nitro-shell gun? Couldn't he have fought them off for a time?"

"Exploring submarine, this! No guns in torpoons like whalers. Gun wouldn't help, anyway. These devils too fast. No use. No hope anywhere. . . ." Sallorsen sank back against the bulkhead, his lips moving but no sound coming forth.

Dully he stared ahead, through the submarine, for a moment before uttering a cackling mockery of a laugh and going on.

"Even after that, still hoped! Blew every tank on ship; blew out most of her oil. Threw out everything not vital. Lightened her as much as could. Machinery—detachable metal—fixtures—baggage—instruments—knives, plates, cups—everything! She rose a couple of feet—no more! Put motors at full speed — back and forth — again, again, again. Buoyancy—power—no good. No damn good!

"And then we tried the last chance. Explosives. Had quite a store. Nitromite, packed in cases; time-fuses to set it off. Had it for blasting ice. I sent up a charge and blew hole in the ice overhead, for our other torpoon.

"Nothing else left. Knew planes must be nearby, searching. Last torpoon was to shoot up to the hole—pilot to climb on ice and stay there to signal a plane."

"Did he get there?"

"Hell no!" Sallorsen cackled again. "It was roped like the other. Pilot tried to get back, but they got him like first. There's the torpoon—out ahead."

Ken could just make it out. It lay ahead, slightly to port, lashed down like its fellow by seaweed-ropes. His eyes were held by it, even when Sallorsen continued in an almost hysterical voice:

"Since then—since then—you know. Week after week. Air getting worse. Rectifiers running down. No night, no day. Just the lights, and those damned devils outside. Wore sea-suits for a while; used twenty-nine of their thirty hours' air-units. Old Professor Halloway died, and another man. Couldn't do anything for 'em. Just sit and watch. Head aching, throat choking— God! . . .

"Some of the men went mad. Tried to break out. Had to show gun. Quick death outside. Here, slow death, but always the chance that— Chance, hell! There's no chance left! Just this poison that used to be air, and those things outside, watching, watching, waiting—waiting for us to leave—waiting to get us all! Waiting. . . ."

"Something's up!" said Ken Torrance suddenly. "They've got tired of waiting!"

CHAPTER V

The Last Assault

SALLORSEN turned his head and followed the torpooner's intent, amazed gaze.

Ken said:

"There's proof of their intelligence! I've been watching—didn't realize at first. Look, here it comes!"

Several sealmen, while Sallorsen had been talking, had come dropping down from the main mass of the horde, and had grouped around the abandoned torpoon which lay some feet ahead of the submarine's bow. Expertly they had loosened the seaweed-ropes which bound it to the sea-floor, then slid back, watching alertly, as if expecting the torpoon to speed away of its own accord. Its batteries, of course, had worn out weeks before, so the steel shell did not budge. The sealmen came down close to it again, and lifted it.

They lifted it easily with their prehensile flipper-arms, and with maneuvering of delicate sureness guided it through the gash in the *Peary's* bow. Inside, they hesitated with it, midway between deck and ceiling of the flooded compartment. They poised for perhaps a full minute, judging the distance, while the two men stared; and then quickly their powerful tail flippers lashed out and the torpoon jumped ahead. It sped straight through the water, to crash its tough nose of steel squarely into the quarsteel pane of the watertight door, then rebounded, and fell to the deck.

"My God!" gasped Sallorsen. But Ken wasted no words then. He pressed closer to the quarsteel and examined it minutely. The substance showed no visible effect, but the action of the sealmen destroyed whatever hope he had felt.

The sealmen had swerved aside at the last minute; and now, picking up the torpoon again and guiding it back to the other end of the compartment, they hurled it once more with a resounding crash into the quarsteel pane.

"How long will it last under that?" Ken asked tersely.

Obviously, Sallorsen's wits were muddled at this turn. He remained gaping at the creatures and at the torpoon, now turned against its mother submarine. Ken repeated the question.

"How long? Who knows? It's as strong as steel, but—there's the pressure—and those blows hit one spot. Not—long."

CAPPING his words, there reechoed again the loud crash of the torpoon's on the quarsteel. The sealmen were working in quick routine now; back and quickly forward, and then the crash and the reverberation; and again and again. . . .

The ominous crash and ringing echoes, regularly repeated, seemed to disorganize Ken's mind as he looked vainly for something with which to brace the door. Nothing unattached was left—nothing! He ran and examined the quarsteel pane again, and this time his brain heated in alarm. A thin line had shot through the quarsteel—the beginning of a crack.

"Back!" Ken shouted to the still staring Sallorsen. "Back to the third compartment. This door's going!"

"Yes," Sallorsen mumbled. "It'll go. So will the others. They'll smash them all. And when this is flooded—no hope of running the submarine again. Controls in here."

"That's too damned bad!" Ken said roughly. "Are there any seasuits, food, supplies in here?"

"Only food. In those lockers."

"I'll take it. Get into that third compartment—hear me?" ordered Kenneth Torrance. "And have its door ready to close!"

He shoved Sallorsen away, opened the indicated lockers and piled his arms with the tins revealed. He had time for no more than one load. He jumped back into the third compartment of the *Peary* just as a splintering crash sounded from behind. The door between was swung closed and locked just as the one being battered crashed inward.

Turning, Ken saw that the torpoon had cracked through the weakened quarsteel and tumbled in a mad cascade of water to the deck of the abandoned second compartment. In dread silence, he, with Sallorsen and those of the men who had strength and curiosity enough to come forward, watched the compartment rapidly fill—watched until they saw the water pressed high against the door. And then horror swept over Ken Torrance.

WATER! There was a trickle of water down the quarsteel he was leaning against! A fault along the hinge of the door—either its construction, or because it had not been closed properly

Ken pointed it out to the captain.

"Look!" he said. "A leak already—just from the pressure! This door won't last more than a couple of minutes when they start on it—"

Sallorsen stared stupidly. As for the rest, Ken might not have spoken. They were as if in a trance, watching dumbly, with lungs automatically gasping for air.

One of the seal-creatures eeled through the shattered quarsteel of the first door and swam slowly around the newly flooded compartment. At once it was joined by five other lithe, sleek shapes which, with placid, liquid eyes, inspected the compartment minutely. They came in a group right up to the next door that barred their way and, with no visible emotion, stared through the quarsteel pane at the humans who stared at them. And then they gracefully turned and slid to the battered torpoon.

"Back!" Ken shouted. "You men!" He shook them, shoved them roughly back toward the fourth, and last, compartment. Weakly, like automatons they shuffled into it. The torpooner said bruskly to Sallorsen:

"Carry those tins of food back. Hurry! Is there anything stored in here we'll need? Sallorsen! Captain! Is there anything—"

The captain looked at him dully; then, understanding, a cackle came from his throat. "Don't need anything. This is the end. Last compartment. Finish!"

"Snap out of it!" Ken cried. "Come on, Sallorsen—there's a chance yet. Is there anything we'll need in here?"

"Sea-suits—in those lockers."

Ken Torrance swung around and rapidly opened the lockers. Pulling out the bulky suits, he cried:

"You carry that food back. Then come and help me."

BUT of the corner of his eye, as he worked, he could see the ominous preparations beyond in the flooded compartment—the sealmen raising the torpoon, guiding it back to the far end, leveling it out. Ken was sure the door could not stand more than two or three blows at the most. Two or three minutes, that meant—but all the sea-suits had to go back into the fourth compartment!

He was in torment as he worked. For him, the conditions were just as bad as for the men who had lived below in the submarine for a month; the poisonous, foul air racked him just as much; what breath he got he fought for just as painfully. But in his body was a greater store of strength, and fresher muscles; and he taxed his body to its very limit.

Panting, his head seeming on the point of splitting, Ken Torrance stumbled through into the last compartment laden with a pile of sea-suits. He dropped them clattering in a pile around his feet and forced himself back again. Another trip; and another. . . .

It would never have been done had not Sallorsen and Lawson, the scientist, come to his aid. The help they offered was meager, and slow, but it sufficed. Laden for the fifth time, Ken heard what he had been anticipating for every second of the all too short, agonizing minutes: a sharp, grinding crack, and the following reverberation. He snatched a glance around to see the torpoon falling to the deck of the second compartment—the sealmen lifting it swiftly again—and a thin but definite sliver in the quarsteel of the door.

But the last suit was gotten into the fourth compartment, and the connecting door closed and carefully locked and bolted. The removal of the suits had been achieved—but what now?

Panting, completely exhausted, Ken forced his brain to the question. From every side he attacked the problem, but nowhere could he find the loophole he sought. Everything, it seemed, had been tried, and had failed, during the *Peary's* long captivity. There was nothing left. True, he had his torpoon, and its nitro-shell gun with a clip of nineteen shells; but what use were shells? Even if each one accounted for one of the sealmen, there would still remain a swarm.

And the sea-suits. He had struggled for them and had saved them, but what use could he put them to? Go out leading a desperate final sally for the hole in the ice above? Death in minutes!

No hope. Nothing. Not even a fighting chance. These seal-creatures, strange seed of the Arctic ice, had trapped the *Peary* all too well. On the roll of mysteriously missing ships would her name go down; and he, Ken Torrance, would be considered a lunatic who had sought suicide, and found it. . . .

OF the twenty-one survivors of the *Peary's* officers and crew, only a dozen had the will to watch the inexorable advance of the sealmen. The rest lay in various attitudes on the deck of the rear compartment, showing no sign of life save torturous, shallow pantings for air and, occasionally, spasmodic clutchings at their throats and chests, as they tried to fight off the deadly, invisible foe that was slowly strangling them.

Ken Torrance, Sallorsen, the scientist, Lawson, and a few others were pressed together at the last watertight door, peering through the quarsteel at the sea-creatures' systematic assault on the door leading into the third compartment. A straight, hard smash at it; another final splintering smash—and again the torpoon pushed through in the van of a cascade of icy, greenish water, which quickly claimed the control compartment for the attackers behind. The creatures were growing bolder. More and more of them had entered the submarine, and soon each open compartment was filled from deck to ceiling with the slowly turning, graceful brown bodies, inspecting minutely the countless wheels and levers and gages, and inspecting also, in turns, the pale, worn faces that stared with dull eyes at them through the sole remaining door.

There was no further retreat, now. Behind was only water and the swarm that passed to and fro through it. Water and sealmen—ahead, above, to the sides, behind—everywhere. Cooped in their transparent cell, the crew of the submarine *Peary* waited the end.

ONCE more, as well as he could with his throbbing head and heavy, choking body, Kenneth Torrance tracked over the old road that had brought him nowhere, but was the only road open. Carefully he took stock of everything he had that he might possibly fight with.

There were sea-suits for the men, and in each suit an hour's supply of artificial but invigorating air. Two port-locks, one on each side of the stern compartment. A torpoon, with a gun and nineteen shells. Nothing else? There seemed to be, in his mind, a vague memory of something else . . . something that might possibly be of use . . . something. . . . But he could not remember. Again and again the agony of slow strangulation he was going through drove everything but the consciousness of pain from his shirking mind. But there *was* something else—and perhaps it was the key. Perhaps if he could only remember it—whatever it was—whether a tangible thing or merely a passing idea of hours ago—the way out would be suddenly revealed.

But he could not remember. He had the sea-suits, the port-locks and the torpoon: what possible pattern could he weave them into to bring deliverance?

No, there was nothing. Not even a girder that could be unfastened in time to brace the last door. No way of prolonging this last stand!

Beside Ken, the strained, panting voice of Lawson whispered:

"Getting ready. Over soon now. All over."

All save five of the sealmen had left the third compartment, to join the swarm constantly swimming around and over the submarine outside. The five remaining were the crew for the battering ram. With measured and deliberate movements they ranged their lithe bodies beside the torpoon, lifted it and bore it smoothly back to the far end of the compartment. There they poised for a minute, while from the men watching sounded a pathetic sigh of anticipation.

As one, the five seal-creatures lunged forward with their burden.

Crash! And the following dull reverberation.

The last assault had begun.

CHAPTER VI

In a Biscuit Can

KEN TORRANCE glanced with dull, hopeless eyes over the compartment he stood in. Figures stretched out all over the deck, gasping, panting, strangling—men waiting in agony for death. His head sank down, and he wiped wet hands across his aching forehead. Nothing to do but wait—wait for the end—wait as the patient horde outside had been waiting in the sea-gloom for their moment of triumph, when the soft bodies inside the *Peary* would be theirs to rip and mangle. . . .

A dragging sound brought Ken's eyes wearily up and to the side. One of the crew who had been lying on the deck was dragging his body painfully toward a row of lockers at one side of the compartment. The man's eyes were feverishly intent on the lockers.

Ken watched his progress dully, without thinking, as inch by inch he forced himself through the other bodies sprawled in his way. He saw him reach the lockers, and for a minute, gasping, lie there. He saw a clawing arm stretch almost up to the catch on one locker, while the man whimpered like a child at his lack of quick success.

Crash! The grinding blow of the torpoon hitting the quarsteel clanged out from behind. But Ken's mind was all on the reaching man's strange actions. He saw the fingers at last succeed in touching the catch. The door of the locker opened outward, and eagerly the man reached inside and pulled. With a thump, a row of heavy objects strung together rolled out onto the deck—and Ken Torrance sprang suddenly to the man's side.

"What are you doing?" he cried.

The man looked up sullenly. He mumbled:

"Damn fish—won't get me. I'll blow us all to hell, first!"

At that the connection struck Ken.

"Then that's nitromite!" he shouted. "That's the idea—the nitromite!"

And stooping down, he wrenched the rope of small black boxes which contained the explosive from the man who had worked so painfully to get them.

"I'll do the blowing, boy!" he said. "Don't worry; I'll do it complete!"

KEN, holding the rope of explosives, crossed the deck and pulled Sallorsen and Lawson around. Their worn faces, with lifeless, bloodshot eyes, met his own strong features, and he said forcefully:

"Now listen! I need your help. I've found our one last chance for life. We three are the strongest, and we've got to work like hell. Understand?"

His enthusiasm and the vigor of his words roused them.

"Yes," said Lawson. "What—we do?"

"You say there's an hour's air left in the sea-suits?" Torrance asked the captain.

"Yes. An hour."

"Then get the men into the suits," the torpooner ordered. "Help the weaker ones; slap them till they obey you!" There came the ugly, deafening crash of the hurled torpoon into the compartment door. Ken finished grimly: "And for God's sake, hurry! I'll explain later."

Sallorsen and Lawson unquestioningly obeyed. Ken had reached the spirit in them, the strength not physical, that had all but been driven out by the long, hopeless weeks and the poisonous stuff that passed for air, and it had risen and was responding. Sallorsen's voice, for the first time in days, had his old stern tone of command in it as, calling on everything within him, he shouted:

"Men, there's still a chance! Everyone into sea-suits! Quick!"

A few of the blue-skinned figures lying panting on the deck looked up. Fewer moved. They did not at once understand. Only four or five dragged themselves with pathetic eagerness towards the pile of sea-suits and the little store of fresh air that remained in them. Sallorsen repeated his command.

"Hurry! Men—you, Hartley and Robson and Carroll—your suits on! There's air in them! *Put 'em on!*"

AND then Lawson was among them, shaking the hopeless, dying forms, rousing them to the chance for life. Several more crawled to obey. By the time the next crash of the torpoon came, eleven out of the twenty-one survivors were working with clumsy, eager fingers at their sea-suits, pushing feet and legs in, drawing the tough fabric up over their bodies, sliding their arms in, and struggling with quick panting breaths to raise the heavy helmets and fasten them into place. Then—air!

Again the ear-shattering crash. The scientist and the captain drove at the rest of the crew. They stumbled, those two fighting men, and twice Lawson went down in a heap as his legs gave under him; but he got up again, and they began dragging the suits to the men who had not even the strength to rise, shoving inert limbs into place, switching on the air-units inside the helmets and, gasping themselves, fastening the helmets down. Theirs was a conflict as cruel, as hard and brutal as men smashing at each other with fists, and they then proved their right to the shining roll of honor, wherever and whatever that roll may be. They fought on past pain, past sickness, past poisoning, that man of action and man of the laboratory.

And outside that foul transparent pit the tempo quickened also. The sledging blows at the last door came quicker. All around the captive *Peary* the sleek brown bodies stirred uneasily. For weeks there had been but little activity inside the submarine; now, all at once, three of the figures that were men whipped the others into action, rousing those lying dying on the deck—working, working. Observing this, the lithe seal bodies moved with new nervous, restless strokes, to and fro, never pausing—passing up and down in a milling stream the length of the craft, clustering closest outside the walls of the fourth compartment, where they pressed as close as they could, their wide brown eyes steady on the haggard forms that worked inside, their smooth bodies patterned by the constantly shifting shadows of their fellows above and behind.

So they watched and waited, while in the third compartment the battered torpoon was slung at the last door, and drawn back, and slung again—waited for the final moment, the crisis of their month-long siege beneath the floes of the silent Arctic sea!

KENNETH TORRANCE worked by himself.

He saw that Sallorsen and Lawson had answered his call; man after man was clad in his suit and sucking in the incomparably fresher, though artificial, air of the units. As he had hoped, that air was revitalizing the worn-out bodies rapidly, giving them new strength and clearing their brains. His plan required that—strength for the men to move and act for themselves—sane heads!

The plan was basically simple. Bringing his best concentration to the all-important details, Ken started to build the road to the world above.

First he opened the inner door of the starboard port-lock, wherein lay his torpoon. Opening the entrance panel of the steel shell, he quickly transferred within the cans of compressed food retrieved from the second compartment. When he had finished, there was left barely room for the pilot's body.

And then the nitromite.

The explosive was carried by the *Peary* for the blasting of such ice floes as might trap her. It was contained for chemical stability in a half dozen six-inch-square, waterproof boxes, strung one after another on an interconnecting wired rope. Ken would need them all; he wished he had five times as many. It would not matter if the whole of the *Peary* were shattered to slivers.

Ken tied the rope of boxes into a strong unit, as small as it could be made. Firing and timing mechanisms were contained in each unit: he would only have to set one of them. He wrapped the whole charge, except for one small corner, in several pieces of the men's discarded clothing—monkey jackets, thick sweaters, a dirty towel—and stuffed it in an empty tin container for sea-biscuits.

ALL this had taken only minutes. But in those minutes the quarsteel of the watertight door had been subjected to half a dozen smashing blows, and already a flaw had appeared in the pane. Another grinding crunch, and there would be the visible beginning of a crack. Three more, perhaps, and the door would be down.

But the plan was laid, the counter move ready; and, as Sallorsen and Lawson, last of them all, got into suits, Ken Torrance, in short, gasping sentences, explained it.

"All the nitromite's in this," Ken said. "I hope it's enough. In a moment I'll set the timing to explode it in one minute—then eject it from the empty torpoon port-lock. It's a gamble, but I think the explosion should kill every damned seal around the sub. Water carries such shocks for miles, so it should stun, if not kill, all the others within a long radius. See? We're inside sub, largely protected. When the stuff explodes, you and men make for the hole you blew in the ice above."

Another crash sent echoes resounding through the remaining compartment. All around the three were suit-clad figures, grotesque and clumsy giants, all feeling new strength as they gulped with leathern throats and lungs at the artificial air which was giving them a respite, however brief, from the death they had been sinking into. In the third compartment of the *Peary*, five seal-like creatures with swift and beautiful movements picked up their torpoon battering ram again; while all around the outside of the *Peary* their hundreds of watching fellows pressed in closely.

"YES!" cried Lawson, the scientist. "But the explosion—it might shatter the ship!"

"No matter; I expect it to!" answered Ken. "Then you can leave through a crack instead of a port-lock."

"Yes—but you!" objected the captain. "Get on a suit!"

"No; I'm jumping into my torpoon in the other port-lock. I've got the food in it. Now, Sallorsen, this is your job. I'll be in my torpoon, but I won't be able to let myself out the port. You open it, right after the explosion. Understand?"

"Yes," replied Sallorsen, and Lawson nodded.

"All right," gasped Ken Torrance. "Empty the chamber." As the captain did so, Ken opened the lid of the biscuit can and adjusted the timing device on the exposed unit in the clothing-wrapped bundle. Then he replaced it, ticking, in the can and thrust the can bodily into the emptied chamber of the port-lock. He closed the inner door of the chamber, and said to the men by him:

"Close your face-plates!"

And Ken pushed the release button; and then he was running to the other port-lock and to his torpoon, and harnessing himself in.

His brain teemed with the possibilities of the situation as he lay stretched out in the torpoon, waiting. How much would the submarine be smashed? Would the charge of nitromite, besides killing the sealmen, kill everyone inside the *Peary?* For that matter, would it affect the sealmen at all? How much could the creatures stand? And would the firing mechanism work? And then would he himself be able to get out; or would the lock in which the torpoon lay be damaged by the explosion and trap him there?

Seconds, only seconds, to wait, small fractions of time—but they were more important than the days and the weeks that the *Peary* had lain, a lashed-down captive, under the Arctic ice; for in these seconds was to be given fate's final answer to the prayer and courage of them all.

Time for Ken expanded. Surely the charge should have gone off long before this! The pulse beat so loudly in his brain that he could hear nothing else. He counted: ". . . nine, ten, eleven—" Had the fuse failed? Surely by now—". . . twelve, thirteen, fourteen—"

On that the submarine *Peary* leaped. Ken Torrance, harnessed inside the torpoon, felt a sharp roll of thunder made tangible, and then complete darkness took him. . . .

CHAPTER VII

The Awakening

HE had no idea of how long he had been unconscious when, his full senses returning, he eagerly peered ahead through the torpoon's vision-plate. For some seconds he could see nothing; but he knew, at least, that the torpoon had survived the shock, for he was dry and snug in his harness. And then his eyes became accustomed to the darkness, and he saw that he was outside the submarine. Sallorsen had followed his orders; had opened the port-lock! The undersea reaches lay ahead of him, and the way was clear.

Ken stared into a gray, silent sea, no longer shadowed with moving brown-skinned bodies. He tried his motors. Their friendly, rhythmic hum answered him, and carefully he slipped into gear and crept up off the sea-floor. He did not dare use his lights.

The *Peary* was a great, blurred shadow, a dead thing without glow or movement, with no figures of sealmen around her. As Ken's eyes gained greater vision, he was able to make out a wide, long rent running clear across the top of the fourth compartment of the submarine. The explosion had done that to her, but what had it done to her crew? What had it done to the sealmen?

He saw the sealmen first. Some were quite close, but in the murk he had missed them. Silent specters, they were apparently lifeless, strewn all around at different levels, and most of them floating slowly up toward the dim ice ceiling.

But up under the ice was movement! Living figures were there! And at the sight Kenneth Torrance's lips spread in their first real grin for days. The plan had worked! The sealmen had been destroyed, and already some of the *Peary's* men were up there and fumbling clumsily across the hundred feet which separated them from the hole in the ice that was the last step to the world above.

A GHOSTLY gray haze of light filtered downward through the water from the hole. Ken counted twelve figures making their way to it. As he wondered about the rest of the crew, he saw three bulging, swaying shapes suddenly emerge from the split in the top of the *Peary*, and begin an easy rise toward the ice ceiling ninety feet above. There was no apparent danger, and they went up quite slowly, with occasional brief pauses to avoid risk of the bends. Clasped together, the group of three were, and when they were halfway to the glassy ceiling of the ice, three more left the rent in the submarine and followed likewise. Twelve men were at the top; six others were swimming up; three more were yet to leave the submarine—and after they had abandoned her, he, Ken, would follow with the torpoon and the food it contained.

So he thought, watching from where he lay, down below, and there was in him a great weariness after the triumph so bitterly fought for had been achieved. He rested through minutes of quiet and relaxation, watching what he had brought about; but only minutes—for suddenly without warning all security was gone.

From out the murky shadows to the left a sleek shape came flashing with great speed, to jerk Ken Torrance's eyes around and to widen them with quick alarm.

A sealman! A sealman alive, and moving—and vengeful! A sealman which the explosion of nitromite had not reached!

Doubtless the lone creature was surprised upon seeing all its fellows motionless, drifting like corpses upward, and the men of the *Peary* escaping. With graceful, beautiful speed, a liquid streak, it flashed into the scene, eeling up and around and down, trying to understand what extraordinary thing had happened. But finally it slowed down and hovered some thirty feet directly above the dark hull of the *Peary*.

The men rising toward the ice had seen the sealman at the same time Ken Torrance had, and at once increased their efforts, fearing immediate attack. Quickly the two groups shot to the top where the other twelve were, and began a desperate fumbling progress over toward the hole that alone gave exit. But the sealman paid no attention to them. It was looking at something below.

Ken saw what it was.

The last three men were leaving the *Peary*. Awkward, swaying objects, they rose up directly in front of the hovering creature.

WITH an enraged thrust of flippers, it drove at them. The three humans—Sallorsen, Lawson and one other, Ken knew they must be—were clasped together, and the long, lithe, muscular body smote them squarely, sent them whirling and helpless in different directions in the sea-gloom. One of them was driven down by the force of the blow, and that one the sealman chose to finish first. It lashed at him, its strong teeth bared to rip the sea-suit, concentrating on him all the rage and all the thirst for vengeance it had.

But by then, down below, the torpoon's motors were throbbing at full power; the thin directional rudders were slanting; the torpoon was turning and pointing its nose upward; and Ken Torrance, his face bleak as the Arctic ice, was grasping the trigger of the nitro-shell gun.

He might perhaps have saved the doomed man had he swept straight up then and fired, but a quick mounting of the odds distracted him for a fatal second. Out of the deeper gloom at the left came a swiftly growing shadow, and Ken, with a sinking in his stomach, knew it for a second sealman.

Then another similar shadow brought his eyes to the right.

Two more sealmen! Three now —and how many more might come?

At once Ken knew what he must do before ever he fired a shell at one of the brown-skinned shapes. The man just attacked had to be sacrificed in the interests of the rest. The torpoon swerved, thrust up toward the ice ceiling under the full force of her motors; and when halfway to it, and her gun-containing bow was pointed at a spot in the ice only twenty feet in front of the foremost of the men stroking desperately towards the distant exit-hole, Ken pressed the trigger; and again, and again and again. . . .

Twelve shells, quick, on the same path, bit into the ice. Almost immediately came the first explosion. It was swelled by the others. The ice shivered and crumbled in jagged splinters—and then there was a new column of light reaching down from the world of air and life into the darkness of the undersea. A roughly circular hole gaped in the ice sixty or seventy feet nearer the swimming men than the old one.

"That'll give 'em a chance," muttered Kenneth Torrance. He plunged the torpoon around and down. "And now for fight!"

WITHOUT pause, now, there was, straight ahead, a hard, desperate duel, a fitting last fight for any torpoon or any man riding one. Each of the seven shells left in the nitro-gun's magazine had to count; and the first of them gave a good example.

Ken turned down in time to see the death of the man first attacked. His suit was ripped clean across, his air of life went up in bubbles, and the water came in. The seal-creature lunged at its falling victim a last time, and as it did so its smooth brown body crossed Ken's sights. The torpooner fired, and saw his shell strike home, for the body shuddered, convulsed, and the sealman, internally torn, went sinking in a dark cloud after the human it had slain.

That sight gave pause to the other two creatures that had arrived, and gave Ken Torrance a good second chance. Motor throbbing, the torpoon turned like a thing alive, its snout and gun-sights swerving straight toward the next target. But, when just on the point of pressing the trigger, Ken's torpoon was struck a terrific blow and tumbled over and over. The whole external scene blurred to him, and only after a moment was he able to bring the torpoon back to an even keel.

He saw what had happened. While he had been sighting on the second seal-creature, the third had attacked the torpoon from the rear by striking it with all the strength of its heavy, muscular body. But it did not follow up its attack. For it had crashed into the whirling propeller, and now it was hanging well back, its head horribly gashed by the steel blades.

For a moment the three combatants hung still, both sealmen staring at the torpoon as if in wonder that it could strike both with its bow and stern, and Ken Torrance rapidly glancing over the situation. The remaining two of the last group of three men, he saw, had reached the top, and the foremost of the *Peary's* crew were within several feet of the new hole in the ice. In a very short time all would be out and safe. Until then he had to hold off the two sealmen.

Two? There were no longer only two, but five—ten—a dozen—and more. The dead were coming to life!

Here and there in the various levels of drifting, motionless brown bodies that he thought the explosion had killed, one was stirring, awakening! The explosion had but stunned many or most of them, *and now they were returning to consciousness!*

CHAPTER VIII

The Duel

UPON seeing this, all hope for life left Ken. He had only six shells left, and at best he could kill only six sealmen. Already there were more than twenty about him, completely encircling the torpoon. They seemed afraid of it, and yet desirous of finishing it—they hung back, watching warily the thing that could strike and hurt from either end; but Ken knew, of course, that he could not count on their inaction long. One concerted charge would mean his quick end, and the death of most of the men above.

Well, there was only one thing to do—try to hold them off until those men above had climbed out, every one.

With this plan in mind, he maneuevered for a commanding position. Quietly he slid his motor into gear, and slowly the torpoon rose. At this first movement, the wall of hesitating brown bodies broke back a little. It quickly pressed in again, however, as the torpoon came to a halt where Ken wanted it—a position thirty feet beneath, and slightly to one side, of the escaping men above, with an angle of fire commanding the area the sealmen would have to cross to attack them.

Almost at once came action. One of the surrounding creatures swerved suddenly up toward the men. Instinctively angling the torp, Ken sent a nitro-shell at it; and the chance aim was good. The projectile caught the sealman squarely, and, after the convulsion, it began to drift downward, its body torn apart.

"That'll teach you, damn you!" Ken muttered savagely, and, to heighten the effect he had created, he brought his sights to bear on another sealman in the circle around him—and fired and killed.

This sight of sudden death told on the others. They grew obviously more fearful and gave back, though still forming a solid circle around the torpoon. The circle was ever thickening and deepening downward as more of those that the explosion had rendered unconscious returned to life.

And then, above, the first man reached the hole, clawed at its rough edges and levered himself through.

That was a signal. From somewhere beneath, two brown bodies flashed upward in attack. Fearing a general rush at any second, Ken fired twice swiftly. One shell missed, but the other slid to its mark. Almost alongside its fellow, one of the creatures was shattered and torn, and that evidently altered the other's intentions, for it abandoned the attack and sought safety in the mass of its fellows on the farther side.

Another respite. Another man through the hole. And but two nitro-shells left!

THE deadly circle, like wolves around a lone trapper who crouches close to his dying fire, pressed in a little; and by their ominous quietness, by the sight of their eyes all turned in on him, their concerted inching closer, Ken sensed the nearness of the charge that would finish him. All this in deep silence, there in the gloomy quarter-light. He could not yell and brandish his fists at them as the trapper by the fire might have done to win a few extra minutes. The only cards he had to play were two shells—and one was needed now!

He fired it with deliberate, sure aim, and grunted as he saw its victim convulse and die, with dark blood streaming. Again the swarm hesitated.

Ken risked a glance above. Only three men left, he saw; and one was pulled through the hole as he watched. Below, in one place, several seal-creatures surged upward.

"Get back, damn you!" he cursed harshly. "All right—take it! That's the last!"

And the last shell hissed out from the gun even as the last man, above, was pulled through up into the air and safety.

Ken felt that he had given half his life with that final shell. Completely surrounded by a hundred or more of the sealmen, he could not possibly hope to maneuver the torpoon up to the hole in the ice and leave it, without being overwhelmed. He had held off the swarm long enough for the others to escape, but for himself it was the end.

So he thought, and wondered just when that end would come. Soon, he knew. It would not take them long to overcome their fear when they saw that he no longer reached out and struck them down in sudden, bloody death. Now it was their turn.

"Anyway," the torpooner murmured, "I got 'em out. I saved them."

But had he? Suddenly his mind turned up a dreadful thought. He had saved them from the sealmen, but they were up on the ice without food. There had been no time to apportion rations in the submarine; all the supplies were stacked around him in the torpoon!

Searching planes would eventually appear overhead, but if he could not get the food up to the men it meant their death as surely as if they had stayed locked in the *Peary!*

But how could he do it without shells, and with that living wall edging inch by inch upon him, visibly on the brink of rushing him. Some carried ropes with which they would lash the torpoon down as they had the others. Must all he and those men had gone through be in vain? Must *he* die—*and* the others? For certainly without food, those men above on the lonely ice fields, all of them weakened by the long siege in the submarine, would perish quickly. . . .

And then a faintly possible plan came to him. It involved an attempt to bluff the seal-creatures.

THIRTY feet above the lone man in the torpoon was the hole he had blasted in the ice. He knew that from the cone of light which filtered down; he did not dare to take his eyes for a second from the creatures around him, for all now depended on his judging to a fraction just when the lithe, living wall would leap to overwhelm him.

Now the torpoon was enclosed by what was more a sphere of brown bodies than a circle. But it was not a solid sphere. It stretched thinly to within a few feet of the ice ceiling where, in one place, was the hole Ken had blown in the ice.

He began to play the game. He edged the gears into reverse, gently angled the diving-planes, and slowly the torpoon tilted in response and began to sink back to the dark sea-floor.

Motion appeared in the curved facade of sleek brown heads and bodies in front and to the sides. The creatures behind and below, Ken could not see; he could only trust to the fear inspired by the damage his propeller had wreaked on one of them, to hold them back. However, he could judge the movements of those behind and below by the synchronized movements of those in front; for the sealmen, in this tense siege, seemed to move as one—just as they would move as one when a leader got the courage to charge across the gap to the torpoon.

In reverse, slowly, the torpoon backed downward. Every minute seemed a separate eternity of time, for Ken dared not move fast at this juncture, and he needed to retreat not less than fifty feet.

Fifty feet! Would they hold off long enough for him to make it?

Foot by foot the torpoon edged down at her forty-five-degree angle, and with every foot the watching bodies became visibly bolder. There was no light inside the torpoon—inner light would decrease the visibility outside—but Ken knew her controls as does the musician his instrument. Slowly the propeller whirled over, the torpoon dropped, slowly the diffused light from the hole above diminished—and slowly the eager wall of sealmen followed and crept in.

Twenty-five feet down; and then, after a long time, thirty-five feet, and forty. Seventy feet up, in all, to the hole in the ice. . . .

Ken wanted seventy-five feet, but he could not have it. For the wall of sleek bodies broke. One or two of the creatures surged forward; others followed; they were coming!

The slim torpoon leaped under the unleashed power of her motors—forward.

FOR one awful moment Ken thought he was finished. The vision of the hole was obscured by a twisting, whirling maelstrom of bodies, and the torpoon quivered and shook like a living thing in agony under glancing blows.

But then came a patch of light, a pathway of light, leading straight up at a forty-five-degree angle to the hole in the ice above.

Sealmen and torpoon had leaped forward at the same moment. Doubtless the creatures had not expected the shell to move so suddenly and decisively *ahead,* so that when it did, those in the van swerved to escape head-on contact.

The torpoon gained speed all too slowly for her pilot. It naturally took time to gain full forward speed from a standing start. But she moved, and she moved fast, and after her poured the full tide of sealmen, now that they saw their prey running in retreat.

From somewhere ahead appeared a rope, noosed to catch the fleeing prey. It slipped off the side. Another touched the bow, but it too was thrown off. The torpoon's forward momentum was now great; she was sweeping up at the full speed Ken had gone back to be able to attain. He needed full speed! The plan would fail at the last moment without it!

Another rope; but it was the seal-creature's last gesture. Through the side plates of quarsteel the light grew fast; the ice was only ten feet away; a slight directional correction brought the hole dead ahead—and at full speed, twenty-four miles an hour, the torpoon passed through and into the thin air of the world of light and life.

Right out of the hole, a desperate fugitive from below, she leaped, her propeller suddenly screaming, and arched high through the air before she dove with a rending, splintering crash onto the upper side of the sheet ice.

And the sun of a cloudless, perfect Arctic day beat down on her; and men were all around, eagerly reaching to open her entrance port. It was done.

KENNETH TORRANCE, dazed, battered, hurting in every joint, but conscious, found the torpoon's port open and felt hands reach in and clasp him. Wearily he helped them lift him out into the thin sunlight. Sitting down, slitting his eyes against the sudden glare, he peered around.

Captain Sallorsen was beside him, supporting him with one hand and pounding him on the back with the other; and there in front was the bearded scientist, Lawson, and the rest of the men.

Ken took a great gulp of the clean, cold air.

"Gosh!" was all he could say. "Gosh, that tastes good!"

"Man, you did it!" shouted Sallorsen. "How, in God's name, I don't know—but you did it!"

"He did!" said Lawson. "And he did it all himself. Even to the food, which should keep us till a plane comes by. If they haven't stopped searching for us."

His words reminded Ken of something.

"Oh, there'll be a plane over," he said. "Forgot to tell you, but I stole this torpoon—see?—and told the fellows they could come and get it somewhere right around here."

Kenneth Torrance grinned, and glanced down at the battered steel shell which had borne him out of the water below.

"And here it is," he finished. "A little damaged—but then I didn't promise it would be as good as new!"

Arcturus at the Exposition

SYMBOLIC of recent advances in the sciences, the light from the giant star Arcturus will be used to start the machinery at the Century of Progress Exposition to be held in Chicago, June 1, 1933. The rays of light will be caught in the forty-inch telescope of the Yerkes Observatory, Williams Bay, and will be brought to focus upon a photometer which, acting as a relay, will make the necessary connections in the Hall of Science situated on the lakefront of Chicago.

Arcturus being forty light years distant from the Earth, the light rays which will serve to open the Exposition left the distant star on their journey through space in 1893, during the World's Columbian Exposition.

The dimensions of Arcturus, as computed by Professor A. A. Michaelson, give it a volume 7,000,000 times that of our sun and a diameter 300 times greater.

The Floating Island of Madness

By Jason Kirby

ABOVE us curved the pale, hot bowl of cloudless sky; below us stretched the rolling, tawny wastes of the great Arabian Desert; and away to the east, close to the dipping horizon, scudded the tiny speck we were following. We had been following it since dawn and it was now close to sunset. Where was it leading us? Should we go on or turn back? How much longer would our gas and oil hold out? And just where were we? I turned and saw my questions reflected in the eyes of my companions, Paul Foulet of the French Sureté and Douglas Brice of Scotland Yard.

Far above the Arabian Desert three Secret Service men find an aerial island whose inhabitants are—madmen.

"Too fast!" shouted Brice above the roar of our motors. I nodded. His gesture explained his meaning. The plane ahead had suddenly taken on a terrific, unbelievable speed. All day it had traveled normally, maintaining, but not increasing, the distance between us. But in the last fifteen minutes it had leaped into space. Fifteen minutes before it had been two miles in the lead; now it was barely visible. A tiny, vanishing speck. What could account for this burst of superhuman speed? Who was in that plane? *What* was in that plane?

I glanced at Foulet. He shrugged non-committally, waving a courteous hand toward Brice. I understood; I agreed with him. This was Brice's party, and the decision was up to him. Foulet and I just happened to be along; it was partly design and partly coincidence.

TWO days before I had been in Constantinople. I was disheartened and utterly disgusted. All the way from the home office of the United States Secret Service in Washington I had trailed my man, only to lose him. On steamships, by railway, airplane and motor we had traveled—always with my quarry just one tantalizing jump ahead of me—and in Constantinople I had lost him. And it was a ruse a child should have seen through. I could have beaten my head against a wall.

And then, suddenly, I had run into Foulet. Not ten days before I had talked to him in his office in Paris. I had told him a little of my errand, for I was working on the hunch that this man I was after concerned not only the United States, but France and the Continent as well. And what Foulet told me served only to strengthen my conviction. So, meeting him in Constantinople was a thin ray of light in my disgusted darkness. At least I could explode to a kindred spirit.

"Lost your man!" was his greeting. And it wasn't a question; it was a statement.

"How did you know?" I growled. My humiliation was too fresh to stand kidding.

"Constantinople," said Foulet amiably. "You always lose them in Constantinople. I've lost three here."

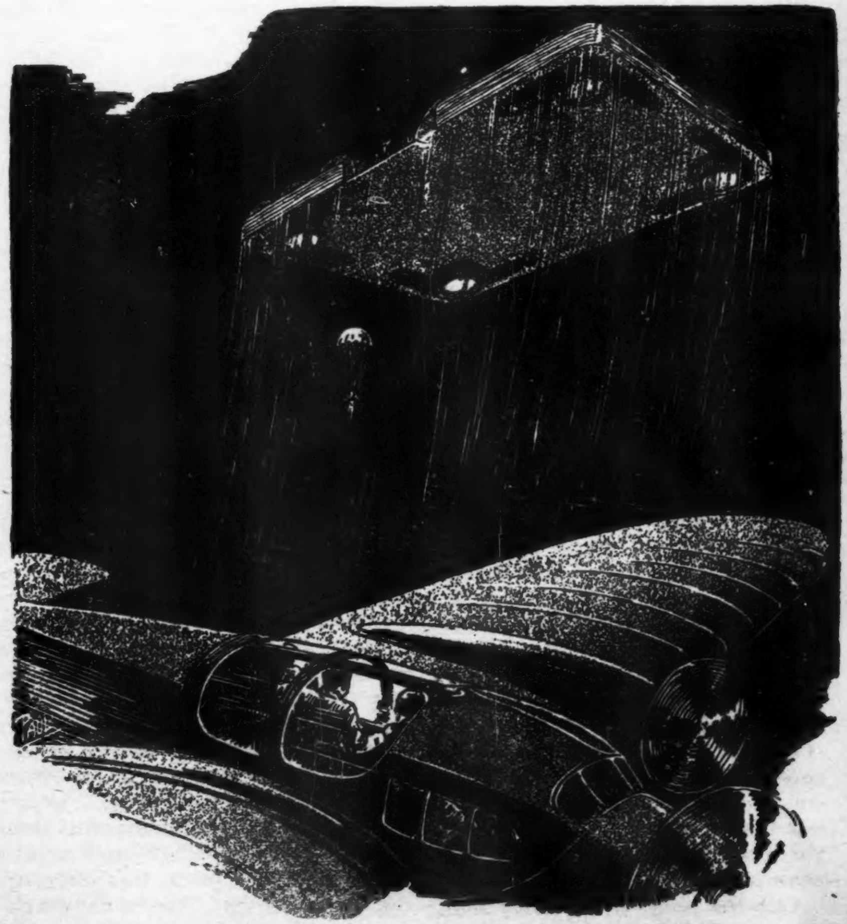
"Three?" I said, "Like mine!"

"Exactly," he nodded. Then he lowered his voice. "Come to my hotel. We can talk there.

"Now," he continued fifteen minutes later as we settled ourselves in his room, "you were very circumspect in Paris. You told me little—just a hint here and there. But it was enough. You—the United States—have joined our ranks—"

"You mean—"

"I mean that for a year we, the various secret service organizations of the Continent—and that includes, of course, Scotland Yard—have been after— Well, to be frank, we don't know what we're after. But we do know this. There is a power—there



A white speck took shape beneath the rising island.

is someone, somewhere, who is trying to conquer the world."

"ARE you serious?" I glanced at him but the tight lines of his set mouth convinced me. "I beg your pardon," I murmured. "Go ahead."

"I don't blame you for thinking it was a jest," he said imperturbably, "But, to prove I know what I'm talking about, let me tell you what this man has done whom you have been pursuing. He has done one of two things. Either he has proved himself a dangerous revolutionary or he has engineered the failure of a bank or chain of banks—"

"We can't prove it," I interrupted.

"No," said Foulet, "Neither can we. Neither can Scotland Yard—or the secret services of Belgium or Germany or Italy or Spain. But there you are—"

"You mean that in all these countries—?"

"I mean that for a year—probably longer—these countries have been and are being steadily, and systematically, undermined. The morale of the people is being weakened; their faith in their government is being betrayed—and someone is behind it. Someone who can think faster and plan more carefully than we—someone whose agents we always lose in Contantinople! I'll wager you lost your man from a roof-top."

I nodded, my disgust at my own stupidity returning in full force. "There was a lower roof and a maze of crisscross alleys," I muttered. "He got away."

"Was there an airplane anywhere around?" asked Foulet.

I glanced at him in surprise. What good would an airplane have been on a roof-top ten feet wide by twelve feet long? Then I remembered. "There was an airplane," I said, "but it was a long way off, and I could scarcely see it; but the air was very still and I heard the motor."

Foulet nodded, "And if you had had a pair of glasses," he said gently, "You would have seen that the airplane had a glider attached to it. There is always an airplane—and a glider—when we lose our men from the roofs of Constantinople."

"But that must be coincidence!" I insisted. "Why, I was on that roof right on the fellow's heels—and the airplane was at least five miles away!"

Foulet shrugged, "Coincidence—possibly," he said, "but it is our only clue."

"Of course," I murmured thoughtfully, "you have never been able to follow—"

Foulet smiled, "Can you imagine where that airplane would be by the time we climbed down off our roofs and got to a flying field and started in pursuit?"

WE descended for dinner. Foulet's story had restored my self-confidence somewhat—but I was still sore. Of course Foulet connecting my vanishing man with that disappearing airplane was absurd—but where had the man gone? Was my supposition that he had jumped to a lower roof, climbed a wall and run through the maze of alleyways in half a minute in any way less absurd?

We were halfway through dinner when Brice appeared. Brice was one of the best men in Scotland Yard and I had known him many years. So, evidently, had Foulet, for his eyes flickered faintly with pleased surprise at the sight of him. Brice came directly to our table. He was bursting with victorious joy. I could feel it somehow, although his face, carefully schooled to betray no emotion, was placid and casual.

All through the remainder of the meal I could feel the vibrations of his excitement. But it was only at the very end that he confided anything—and his confidence only served to make the excitement and sense of impending thrill greater.

Just as he was rising to leave he shoved a tiny strip of paper across the table to me with a sidelong glance at Foulet. "Another roof-top," I read scrawled in pencil. "If you like, meet me at the flying field before dawn." If I liked! I shoved the paper across to Foulet who read it and carelessly twisted it into a spill to light his cigar. But his hand shook ever so slightly.

Needless to say we went to the flying field shortly after midnight. Brice was there, pacing up and down restlessly. Near him was a huge tri-motored biplane, its motor humming in readiness.

"I've put a man on the trail in my place," Brice told us briefly. "Somebody else is going to lose the scent on a roof-top—and I'm going to watch."

WE settled to our wait. To me it seemed absurdly hopeless. The flying field was on a slight rise. Below us spread the dark shadow that was Constantinople. There was no moon to give it form and substance—it was just a lake of deeper darkness, a spreading mass of silent roof-tops and minarets. How did Brice expect to *see* his quarry escape? Suppose he fled during the night? And even with daylight—

The first streaks of dawn found us still waiting, our ears strained for the hum of an airplane motor. But hardly had the golden rim of the sun appeared over the horizon when it came. It came from the east—straight out of the golden glory of the sun. Nearer and nearer it came; an airplane—alone.

"It hasn't got the glider," muttered Foulet and his tone was tinged with disappointment. But hardly had he spoken when, from one of the myriad roof-tops below us, rose a swift streak of shadow. So fast it flew, with such unbelievable speed, that to our eyes it was little more than a blur; but—

"The glider!" Brice gasped. "My God! How did he do it?" We stared, silent with amazement. The airplane, that only a second before had flown alone, now was towing a glider—a glider that had arisen, as if by magic, from the housetops!

Another instant and we had piled into the cockpit of the tri-motored plane and were off on our pursuit. That pursuit that led us on and on till, as the sun sank behind us, we found ourselves above the illimitable, tawny wastes of the great Arabian Desert.

And now—what? All day long, as I have said, the plane we were pursuing had maintained, but never increased, the distance between us. Each hour had brought us renewed hope that the next hour would bring capture—or at least some definite clue, some shred of information. But the plane, still towing its glider, had gone on and on, steadily, imperturbably. And we dared not open fire and attempt to bring it down for fear of destroying our one meager chance of following it to its destination.

AND now it had vanished. Suddenly, unaccountably it had taken on that terrific burst of speed which I have described. In ten minutes it had become a speck on the far horizon—in another instant it was gone. We were alone. Night was falling. If we turned back our gas might bring us to safety. If we went on—what?

I turned to my companions. Foulet still maintained his non-committal attitude, but Brice was deeply disappointed and worried. His ruddy English face was knotted in a scowl and his blue eyes were dark. Quickly he jerked his head back. We understood. Of course, turning back was the only thing to do; to go on was absurd. Our quarry had totally disappeared. But it was heart-breaking.

Once again we had been fooled and outwitted. Our disappointment filled that tiny cockpit like a tangible mist. Brice threw over the stick with a gesture of disgust. In response our right wing lifted a bit, seemed to shake itself, then settled—and the plane continued on its course. Brice's eyes flickered with surprise. He shoved the stick back, threw it over again, but toward the opposite side. Obediently our left wing lifted as if to bank, a shudder passed through it, it dropped, the plane leveled, and went on.

Foulet leaned forward, his eyes were gleaming, his face flushed and eager. "Climb!" he yelled above the roar of the motors. "Up!" Brice nodded—but it was no use. That plane was like a live thing; nothing we could do would swerve it from its course. We stared at one another. Were we mad? Were we under a hypnotic spell? But our minds were clear, and the idea of hypnosis was absurd, for we had tried to turn back. It was the machine that refused to obey.

Again Foulet leaned forward "Drop!" he shouted. Brice nodded, but the plane refused to respond. On and on, straight as a die, it sped.

"Try slowing the motor," I yelled into Brice's ear and both Foulet and I leaned forward to watch results.

The motors slowed. Gradually the roaring, pounding hum lessened, and our speed continued! The whine of the wind in the wires abated not one whit! The speedometer on our instrument board climbed!

Brice turned, His face, in the deepening dusk, was a blur of pasty white. His hands hung at his sides. The motors purred, pulsed, were silent. The plane, unaided, unguided, flew alone!

WE sat hushed and unbelieving in that terrible, deathlike silence. Our ears, attuned all day to the deafening roar of the motors, felt as if they would burst in the sudden, agonizing stillness. There was not a sound save the whine of the wind in the wires as the plane sped on. Above us curved the illimitable arch of darkening sky. Below us lay the empty stretch of blank desert.

We didn't speak. I know that I, for one, could not bring my voice to break that ominous stillness. Silently we sat there, watching, waiting. . . . The quick darkness of the desert fell like a velvet curtain. The stars burst forth as if lit by an invisible hand. Foulet stirred, leaned forward, gasped. My eyes followed his gaze. Before our plane spread a path of light, dull, ruddily glowing, like the ghost of live embers. It cut the darkness of the night like a flaming finger—and along it we sped as if on an invisible track!

"The speed of that other plane," muttered Brice, breaking that utter silence, "this was it!"

Foulet and I nodded. Well could I imagine that we were traveling at that same terrific, impossible speed. And we were helpless—helpless in the clutch of—what? What power lay behind this band of light that drew us irresistibly toward it?

The ruddy pathway brightened. The light grew stronger. Our speed increased. The whine of the wires was tuned almost past human hearing. The plane trembled like a live thing in the grip of inhuman forces. A great glowing eye suddenly burst from the rim of the horizon—the source of the light! Instinctively I closed my eyes. What powers might that eye possess? The same thought must have struck Brice and Foulet for they ducked to the floor of the cockpit, pulling me with them.

"Take care!" Brice muttered, "It might blind us."

We sat huddled in that cockpit for what seemed an eternity, though it couldn't have been more than two minutes. The glare increased. It threw into sharp, uncanny relief every tiny detail of the cockpit and of our faces. The light was as powerful as a searchlight, but not so blinding. It had a rosy, diffused quality that the searchlight lacks.

IN that eternity of tense waiting I tried to collect my thoughts. I told myself that I must keep steady, that I must keep my mind clear. I struggled to get a grip on myself; the light, the steady flying without power, the boundless, horrible silence had shaken me. But there was more to come. I knew it. We all knew it. And it was not physical strength that would pull us through—it was wits. We must hold steady. Thank God we all had years of training—war experience, peace experience, countless life-and-death adventures—behind us. It would all count now. It would all help us to keep our brains clear and cool. Wits, I thought again, only our wits would stand between us and—what?

The ground wheels of the plane struck something solid; rolled; stopped! The light snapped off. The sudden blackness, falling like a blanket of thick fur, choked me. In that first dazed, gasping instant I was conscious of only one thing. The plane was no longer in motion. But we had not dropped; of that I was sure. We were still, as we had been, close to two thousand feet above the earth!

Then came the sound of running feet and a confused blur of voices. The door of the cockpit was thrown open. A man leaned in, his hand on the jamb.

"Inspector Brice," he said quietly. "Monsieur Foulet. Lieutenant Ainslee. We are glad to welcome you." His words were courteous, but something in his tone sent a tingling chill down my spine. It was cold, as soulless as the clink of metal. It was dull, without life or inflection. But there was something else—something I could not name.

I WAS nearest the door and scrambled out first. To my surprise it was not dark. We were envelopd by a radiance, rosy as the broad ray had been, but fainter, like the afterglow of a sunset. By this light I could make out, vaguely, our surroundings. We seemed to be on a plateau; a great flat space probably an acre in extent, surrounded by a six-foot wall. Behind us there was a wide gateway through which our airplane had just come and across which workmen were dropping bars made of some material like cement. Before us, dotting this acre or so of plateau, were small, domed structures made of the same cement-like material. In the center of the plateau rose a larger domed building with a segment of its roof open to the stars and through this opening I could see the shadowy suggestion of a great lamp. There was the source of that powerful magnetic ray!

Foulet and Brice scrambled out and stood beside me. They said never a word, but I knew that every sense was alert.

"If you will follow me," that same cold, expressionless voice murmured. I turned to look at the man. He was not bad looking, clean shaven, well tailored. He swung his eyes to meet my gaze and as he did so that same chill fled along my spine. His eyes—what was the matter with them? They were dark—brown or black—and as shiny as shoe buttons. But there was no gleam of expression in them. Their shine was the glitter of polished glass.

Without a word we followed him across the small cleared space where our airplane stood, past a row of the small, domed structures to a low door cut in the white wall of the great central building. At the doorway he turned.

"I am taking you to the Master," he said; then, over his shoulder he added, "There is no means of escape

—we are two thousand feet above the earth!" And he laughed—a quick, short cackle of crazy laughter. I felt the breath catch in my throat and the short hairs prickle at my neck. Foulet gripped my arm. Through my coat I could feel the chill of his fingers, but his grasp steadied me.

We walked on, following our guide. Down a narrow passageway, through a low arched door into a small room, evidently an ante-chamber to a larger room beyond. Without a word our guide left us, passing through another door which he closed after him.

Brice and Foulet and I exchanged looks, but we were silent. It might be we were watched. It might be that the very walls had ears. We could trust nothing.

Our guide returned. "The Master," he said and flung open a wide door.

WE found ourselves in a large room filled with paraphernalia of all sorts: wires, lights, laboratory tables cluttered with test tubes and apparatus—and in the midst of this ordered chaos stood a man, his gleaming eyes watching us fixedly.

At first I was conscious of nothing but his eyes. Large, coal black and shiny with that peculiar, expressionless gloss I had noted in the eyes of our guide. Later I realized that he was of slight build, meticulously neat, with a tiny black waxed mustache and a carefully trimmed Van Dyke beard.

"Welcome to my floating island," he said gravely, never swerving those shiny eyes for an instant. "We have hoped long for your coming." He paused, noiselessly rubbing his hands, and watching us. We stared back, fascinated by that glossy, fixed gaze. "There is much to tell you," he went on, "and to ask you." He permitted himself a slow smile that spread his lips but failed to reach his eyes. "During your stay here," he continued, "which I hope will be both long and profitable, you will become my slaves and will know me as Master. But before you come under my domination you may know my name."

For the first time he moved his eyes. His glance swept the room as if to assure himself we were alone. He stepped, as swiftly and softly as a cat, over to the door through which we had entered, opened it, spoke to our guide who was waiting in the ante-room, closed it and returned. He faced us, his lips smiling and his eyes as blank as polished agate.

"My name," he said softly, "is Algernon — Frederick — Fraser!" He paused and watched us. Behind me I felt Foulet start; I heard Brice's quickly suppressed gasp. My own throat closed on words that might have been fatal. Algernon Frederick Fraser! Was it possible? Could it be?

Five years before Fraser had suddenly burst on the world of science. He had made some amazing discoveries regarding the power of light; discoveries that would reorganize the living conditions of the world. For a week or two the papers were filled with the man's amazing genius; then no more was heard of him. Had he died? What was the story?

TWO years passed and even the name of Fraser was forgotten. Then suddenly it burst forth again in the headlines of the world. Fraser had disappeared! Fraser had vanished! But not as a brilliant genius of science; he had gone as an escaped lunatic! After his amazing burst of fame his mind had snapped. Somehow the story had been kept out of the press.

Fraser was incarcerated in a quiet, very private asylum, and that was all. All—until he escaped. When that happened the story couldn't be hushed any longer. The press was informed, the people were warned. He became known as the Mad Menace. The police and secret service organizations of the world searched for him. His name became a byword. Where had he gone? What would he do? What was his scheme? For he was still the astounding scientific genius. That portion of his mind was untouched. At the time of his escape the physicians in charge of the case assured the press that Fraser's scientific mind was every bit as sound as ever.

And that was all. Aside from his god Science he was a maniac—inhuman, cruel, unreasoning. What would such a man do loosed in the world? What might he not do? Was it possible that it was this man who stood before us now with his eyes fastened upon us so intently and his lips spread in that little, empty smile? Suddenly I knew! Those eyes! Those eyes were the shiny, vacuous, soulless eyes of a madman!

"I see," he said softly, "that you have heard of me. But it is three years since your world has seen me—yes?" He laughed—a low laugh that seemed to freeze the air around him. "They call me mad." His smile faded, his eyes bored through us like steel needles. "I am not mad! No madman could do what I have done in three years!" For the first time an expression flickered in his eyes—a crafty gleam of vanity that flared instantaneously. "Would you like to see?" He leaned toward us. We bowed, but it was Brice who spoke.

"Very much, Doctor Fraser—"

"Don't call me that!" The man whirled like a tiger ready to spring. "Don't call me that! I am Master here! Call me Master! Say it." His voice rose to a shriek. "Say it—Master!"

I CLAMPED my teeth against the bloodless horror of that maniacal voice. It chilled my veins. Again I felt the hair rise on my scalp. Brice bowed quietly, and his eyes, serene and blue, met Fraser's fairly.

"Of course, Master." His low English voice soothed the bristling silence. "I am sure I speak for Monsieur Foulet and Lieutenant Ainslee when I say that we would be most deeply interested in your achievements."

Fraser was placated. He relaxed. He softly rubbed his hands while a smug, crafty smile flitted across his lips. "You will follow me," he murmured.

He led the way back through the ante-room and down the passageway till we stood again under the stars, and again I was struck by the strange light, warm and faint and rosy like a sunset afterglow. As if he read my thought Fraser turned to me.

"I will show you first the source of this rosy light; that, I believe, will explain a great deal." He led the way down one of the narrow pathways between the low, domed houses—if they could be called houses, for they were little larger than kennels. At the six-foot wall that surrounded this plateau he paused. "Would you like to look over the wall?" he asked.

For the space of a breath we hesitated. Was this a trap? Through my mind flashed the words of the man who had guided us to Fraser. "You are two thousand feet above the earth," he had said. Was that true? And if it were, might not Fraser push us over the wall? But instantly logic came to my rescue. Fraser had brought us here, and he could have brought us for but one thing: to question us. Would he be apt to do us harm before those questions were asked? And besides, would Fraser's brilliantly subtle mind stoop so low as to destroy enemies by pushing them over a wall?

"Thank you," we murmured simultaneously. "This whole achievement is of tremendous interest to us," Foulet added.

Fraser chuckled. "It will be of greater interest—later," he said, and his blank, glittering eyes rested on first one of us, then another with a cold, satisfied gleam. Then he lifted his hand and opened a square door in the wall about the size of a port-hole. To my surprise the little door swung back as lightly as a feather and made scarcely a sound as it slammed against the wall itself. Again Fraser answered my unspoken thought.

"It has only substance," he said with his vain smirk. "No weight whatever. This entire platform together with its huts is lighter than air. If I should tear loose this little door it would float out of my hands instantly and go straight up to the stars. The substance—I have called it Fleotite—is not only lighter than air but lighter than ether."

"But we are not floating," said Brice; "we are stationary. Is the lightness of your Fleotite counteracted by the weight of the men and machines?"

Fraser shook his head. "Not entirely," he said. "But first look through this little window. Then I will explain."

EAGERLY we pressed forward. Our danger was almost forgotten in our interest. This was amazing—stupendous! Together, shoulder to shoulder, we gazed through the aperture. We were suspended in space! Above us shone the blue-black Arabian night, and beneath us—far, far beneath—lay the sands of the desert looking rosy and warm in that same dull red glare of light, that, to a fainter degree, gave us the effect of afterglow. But we were not floating; we were anchored as securely as a ship riding in a calm harbor.

We turned back to Fraser, amazed, awed, bursting with questions. Madman he might be, but he had wrought a miracle.

"I will explain," he said and his glassy eyes gleamed with pride. "Of course you know of my tremendous discoveries connected with the power of light. At any rate, five years ago, the scientific world on earth thought they were tremendous. In reality that was nothing to my amazing strides in the past three years. There is nothing that cannot be done with light! Nothing!" For the first time Fraser's eyes became alive. They were illumined. His whole body seemed to radiate light and fire and genius. We listened, fascinated.

"Take, for instance," he continued eagerly, "that ray with which I drew you and your plane to me. That ray is the pure power of magnetism. At full strength it will draw anything to it instantly. Fortunately the power can be regulated: I can switch a lever in my laboratory and draw things to me, via the ray, at any speed I wish—one hundred, two hundred, a thousand miles an hour.

"HOW far can you throw the ray?" asked Foulet, and I knew he was thinking of that glider that rose from the roof-tops of Constantinople. Fraser also knew he was thinking of that.

"I did not draw the glider," he said quietly. "The airplane I sent did that. My airplanes carry batteries of this ray. In the beginning I found gliders to be more practical for my purposes than airplanes. For one thing they were silent. My only problem was that of getting them off the ground. Once they were in the air I could manage everything. It was this problem that inspired this discovery and perfection of the ray. But you asked how far I can throw the ray? This main lamp, that I operate myself from here, is effective at two hundred miles. At one hundred miles it enjoys its full power."

"And you can draw anything to you," asked Brice, "within the radius of the magnetic ray?"

"Anything in the air," answered

Fraser. "But of course I must use caution. Great caution. If I drew planes to me indiscriminately I would draw attention to myself; my secret and my location here would leak out. No. That must not be. So the only planes I bring are my own—and yours." He paused and his black eyes, again glassy, swept over us. "It is a compliment I pay you," he said finally. "You have become too troublesome. You know too much. Sooner or later the time would come when you would combine your forces. That would be a nuisance. So I decided to bring you here."

"Suppose," asked Foulet curiously, "we hadn't fallen into your trap? Suppose we had turned back before reaching the point where your ray is effective?"

Fraser shook his head and that smug, offensive smile appeared again. "You were trapped from the beginning, though you didn't know it," he said. "The plane you were following was equipped with batteries of the ray which, while not as powerful as the lamp I have here, were still powerful enough to hold you to the course we choose you to run. But enough of the ray," he added impatiently. "There are one or two other things I want to explain and then—" he paused and the pause, somehow, was alive with menace. What was he going to do after he had finished treating us as honored guests? For the third time he answered my unspoken question. His eyes narrowed till they were black, glittering slits. His voice, as he leaned toward us, was no more than a hissing whisper.

"SLAVES!" he said, and his lips twisted. "How will you like to be slaves of Mad Algy Fraser?" He laughed—a chuckle that started in his throat and rose and rose till it seemed to shatter my ear-drums. I felt my teeth grinding together and my nails bit my palms in my effort to control my nerves against the strain of that maniacal glee. Suddenly he sobered. His laugh died instantly like a radio that has been snapped off. "Listen and I will tell you. I will tell you everything because it is necessary for you to know so that you may work for me intelligently and you will remember better and be of greater use to me if I tell you now while you are yet—sane!"

"Sane!" The exclamation sprang from the three of us simultaneously. I felt a cold chill start between my shoulder blades. For an instant my breath choked in my throat. My heart paused—and then raced. What did he mean? What was he going to do to us? What scheme had he evolved in his crazed brain?

"I have perfected a serum"—his tone was professional, cold; he might have been talking to a class in a lecture room—"a serum that robs the patient of every vestige of human emotion—and therefore sanity. All his intellect, his memories, however, remain, to serve him in carrying out my orders. He loses all his will to live and resist, and becomes nothing but an automaton, whose complete mental equipment is at my command."

There was silence. His glassy black eyes, blank and soulless, swept over us. His mouth curled in that smug, complacent smile. He had us with our shoulders to the floor. He knew it—and he knew we knew it. There was no possible way we could escape. We were two thousand feet above the earth. Our plane wouldn't get a quarter of a mile before the magnetic ray would bring it back. Parachute? Even supposing we could get parachutes where would we go? Drop two thousand feet into the middle of the Arabian Desert?

My brain raced. Never before had I been in such a tight place. And soon—if Fraser had his way—I wouldn't even have a mind to think with! I felt choked, stifled. Was there no way out? It seemed to me that a blanket—a soft, terrible blanket of uncontrollable circumstance—was being folded around me, robbing me of the use of my limbs, paralyzing me, numbing me. And out of this terrible helplessness came again Fraser's voice.

"I have told you enough," he said suavely, "so that you may have a faint idea of my power. I will send you now to Doctor Semple who will administer the serum and place you under the 'nourishment ray.' This is another of my discoveries," he added casually. "It is a ray which allows the patient to absorb, through the shell of the skin, sufficient nourishment, both solid and liquid, to last for twenty-four hours."

FIVE minutes later we stood in a small room that might have been the office of an up-to-date physician anywhere in the world. Across the polished top of a mahogany desk Dr. Semple stared at us, his eyes, like the eyes of our guide and Fraser, polished and expressionless. But now we understood. Those eyes were expressionless because there was nothing to give them expression. I tried to force my mind to comprehend the almost incomprehensible. We were among men who were not men! We were fast in the power of human beings who possessed no trace of humanity, who had become nothing but scientific Robots even though they still had bodies of flesh and blood! It was unbelievable! My hands grew cold and my brain hot at the thought. Yet, gazing into the bright, enamelled eyes of Dr. Semple, I knew it was true.

Carefully, scientifically, we were prepared for our injections. And with every mechanical move of the doctor my mind seemed to take on fresh speed as it raced toward some solution to our terrible problem. My eyes flew around the tiny office searching for some means of escape. Doctor Semple turned to prepare the syringe. Behind his back Brice gestured frantically. Somehow I understood. In my pocket was a flask—a flask I had filled with drinking water in Constantinople. Bewildered, I handed it over to him.

The doctor turned, swabbed a patch of iodine on our arms, reached for the syringe. As he leaned over, Foulet thrust forward a foot. The doctor tripped, sprawled full length on the floor. Foulet and I quickly stooped to pick him up, standing between him and Brice—shielding his eyes so that he could not see. We fumbled to give Brice time. We apologized and soothed. Out of the tail of my eye I could see Brice working like lightning—emptying out the syringe of that villainous liquid, filling it with clear water.

IT was done! We raised the doctor to his feet; gave his clothes a final brush. But as we stood back I know my hands were trembling and I had to clamp my teeth to keep them from chattering. Were we out of danger yet? Would the doctor discover our ruse? And, if we got out of his office without receiving the terrible injection could we successfully fool Fraser and his "slaves" into believing we were mad? Fool them until we got a chance to escape? Could we simulate that glassy stare? Were we sufficiently good actors to get away with it? The questions pounded and raced through my brain in that instant when Doctor Semple turned again to his desk and picked up the syringe.

But the miracle happened! Mechanically he gave us the injection—never suspecting that it was not the devilish liquid he had put in, but only clear water! Then he stepped back and watched us. Cold chills raced up and down my spine. What were we supposed to do now? What was the action of the serum? Did it act at once or slowly? Was it supposed to make us sick? Did it send us to sleep? How could we simulate symptoms when we had no idea what these symptoms were supposed to be? But the cold voice of the doctor cut sharply across my agonized questions.

"You will lie down here," he said, opening a door into a room whose walls were lined with bunks, like an opium den. "In half an hour I will come for you. By that time—" His lips spread in that same travesty of a smile Fraser had employed.

We filed into the room and the door closed behind us. Obediently we lay down on the narrow bunks. We dared not speak. We scarcely dared glance at each other. We must act, at all times, as if we were observed. Might not Fraser have a ray that could penetrate walls? Might he not, even now, know that we had outwitted the doctor and had not received the fatal injection? And what then? Suppose Fraser himself superintended another injection? I pulled my thoughts back from the terrible supposition. One thing at a time. So far all had gone well. I lay down on the bunk and closed my eyes.

Half an hour later we heard the door open. Now, I thought, when I look up, I am supposed to be mad! I struggled to make my mind a blank. I tried to force into my eyes that peculiar, brilliant, shiny, vacant expression I had noticed. Would I succeed?

I RAISED my eyes. The doctor was standing before us. With a gesture he bade Foulet go to him. I watched beneath lowered lids. Thank God he had called Foulet first. Foulet had dabbled in the psychology of insanity. Foulet would know how to act, and I would ape him. Coldly, mechanically Doctor Semple ran him through a few tests. I watched with bated breath. The doctor nodded. Foulet had passed!

It was my turn. I did exactly as Foulet had done—and succeeded! I had to turn away swiftly so that the doctor wouldn't see the gleam of triumph in my supposedly mad eyes.

He motioned to Brice. But just as Brice stepped forward the door opened and Fraser came into the room. For an instant everything reeled. We were gone! But even in that terrible instant of despair I remembered to keep my eyes blank. No trace of expression must appear or we were lost. I stretched my lips in that travesty of a smile I had seen the others use. Fraser stared at us, one after the other. He nodded.

"It is well," he said slowly and distinctly as if he were talking to small children. "Your names will still be as they were." We stared at him blankly and again he nodded. "You have forgotten your names—ah! Yours," he pointed to me, "was Ainslee, and it still is. And you are Monsieur Foulet. But Brice—" he paused. My heart hung in my breast, suspended there with terror. What was the matter with Brice? What did Fraser suspect—or know? He turned to the doctor. "You will give Inspector Brice another injection," he said. "The Inspector has a strong mind, and a clever one. A normal injection would not be enough."

It seemed to me that my blood froze. In that terrible instant it ran, like tingling ice, through my veins. Brice! The brainiest man in Scotland Yard! For Fraser was right. Brice had more brains than Foulet and I together. And in another half hour Brice would be no better than an idiot! For I didn't fool myself. Even Brice couldn't outwit Doctor Semple twice.

"You will follow me," said Frazer, turning to Foulet and me. "I will put you under the nourishment ray while Doctor Semple attends to Brice." Obediently, with slightly shuffling gait and vacant eyes we followed him into an adjoining room, leaving Brice behind. I didn't even trust myself to glance at him as we left. But my heart was in my boots. When would we see him again? And what would he be?

THE room we entered was dark, but instantly Fraser switched on a mellow, orange-colored light, that flooded the room with a deep, warm glow.

"Strip yourselves and sit down," he said, pointing to deep lounging chairs that filled the room. "You will do nothing. Relax and allow the light to bathe you. In half an hour I will come back with instructions."

We obeyed, I imitating blindly every vague, mechanical movement of Foulet's. We settled ourselves in the comfortable chairs and Fraser left us. He had told us to relax—but to do anything else would have been impossible. The light soothed us, eased us; gave us, somehow, a penetrating sensation of peace and complete comfort. It flowed around us, warming us, lulling us to a delicious dreamy state that was neither waking nor sleeping. It wiped out danger; it wiped out Time; nothing existed but this warm and relaxing sense of utter satisfaction and peace.

Through this mist of contentment came Fraser's voice, "That is all!" The light faded gradually, and as gradually we came to ourselves. "You will dress," directed Fraser in the same clear, clipped manner, "and you will come to me in my laboratory."

Fifteen minutes later we stood before him, vacant-eyed and solemn. Fraser fastened his black, polished eyes upon us. "You will tell me," he said distinctly, "all you know."

We were silent. How could we tell him all we knew when we were supposed to have forgotten everything? Was this a trap? Or did our inside secret service information come under the general head of Science? But before these questions had actually formed in my mind I remembered that several times Fraser had answered my questions before they were asked. Might he be a mind reader? Best to take no chances! I made my conscious mind as blank as possible and gazed back at him. At my side Foulet made a vague and uncertain noise in his throat.

"Your countries are afraid of me?" Fraser leaned forward, that smug, vain smile curling his lips. "Your countries know there is a power abroad stronger than they? They feel that between the twin horns of economic pressure and the red menace they will be tossed to destruction?"

"Destruction?" repeated Foulet with all the vacant inflection of idiocy.

"Tossed?" I asked imitating Foulet. But instantly I wondered if we were taking the right tack for Fraser's eyes grew red with fury.

"ANSWER me!" he raged. "Tell me that your countries know that soon I shall be master of the world! Tell me they are afraid of me! Tell me that in the last three years I have slowly gained control of commerce, of gold! Tell me that they know I hold the economic systems of the world in the hollow of my hand! Tell me that not a government on earth but knows it is hanging on the brink of disaster! And I—I put it there! My agents spread the propaganda of ruin! My agents crashed your Wall Street and broke your banks! I! I! I! Mad Algy Fraser!" He stopped, gasping for breath. His face was scarlet. His eyes glowed like red coals. Suddenly he burst into a cascade of maniacal laughter, high, insane, terrible.

It took all my control to keep my eyes blank, my face devoid of expression. Out of the tail of my eye I saw Foulet smiling, a vague, idiotic smile of sympathy with Fraser's glee. But suddenly the glee died—as suddenly as if a button had snapped off the current. He leaned forward, his black eyes devouring our faces.

"They are afraid of me?" It was a whisper, sharply eager. "The world knows I am Master?"

"Master," repeated Foulet. It wasn't quite a question, yet neither was it sufficiently definite as an answer to arouse Fraser's suspicions. To my relief it satisfied him. The congested blood drained out of his face. His eyes lost their glare. He turned and for several minutes tramped up and down the laboratory lost in thought. At last he came back to us.

"I have changed my mind," he muttered. "Come with me."

Without a word we followed him, out through the door and down the passageway. Out of the building he led us. The air was stirring with the first breath of dawn and along the horizon glowed a band of pure gold where the sun would soon rise. When he had walked some thirty yards from the laboratory Fraser paused. With his toe he touched a spring in the platform. A trap door instantly yawned at our feet. I suppressed a start just in time. but through my body shot a thrill of fear. My muscles tensed. My heart raced. What now? Where could a trap door, two thousand feet above the earth lead? Was he going to shove us into space because we refused to answer his questions?

"Go down," Fraser ordered.

FOR the space of a breath we hesitated. To disobey meant certain and instant death at the hands of this soulless maniac. But to obey —to drop through this trap-door— also meant death. I took a step forward. Could we overpower him? But what if we did? There were others here beside Fraser. How many others I had no idea, but surely enough to make things impossible for Foulet and me. Yet we dared not even hesitate. To hesitate implied thinking—and a man robbed of his brain cannot think! There was no way out. Together Foulet and I stepped to the brink of the yawning hole. . . .

For an instant we were almost blinded by a glare of rosy light that seemed to burst upon us from the earth so far below. Here was the source of that strange afterglow! Away beneath us, evidently on the sands of the Arabian desert, glowed four red eyes sending forth the rosy rays that converged at the center of the floating platform. Instantly I comprehended Fraser's scheme. The Fleotite he had invented, and of which the platform and buildings were made, was lighter than air. It followed, therefore, that if it were not anchored in some way it would instantly rise. So Fraser had anchored it with four of his magnetic rays! He had told us that he could regulate the pulling power of the ray, so what he had obviously done was to calculate to a nicety the lift of the Fleotite against the magnetism of the rays.

But instantaneously with this thought came another. Fraser was urging us into the glow of the magnetic ray! If once our bodies came entirely within the ray we would be yanked from the platform and dashed to death—sucked to destruction on the sands below.

In my ear I heard Fraser's fiendish chuckle. "The instinct of fear still holds, eh? My serum can destroy your conscious mind—but not your native fear? Cowards! Fools! But I am not going to push you off. Look!" With his foot he pressed another lever which, while it did not shut off any of the light, seemed to deflect the ray. "Fools!" he said again scornfully. "Go down!"

THEN it was I saw where he was sending us! Thirty feet below the platform there swung a small cabin, attached by cables and reached by a swinging steel ladder. As I looked a door in the roof slid back. "Climb down!" ordered Fraser again. There was nothing to do but obey. Accustomed as I was to flying, inured as I had become to great heights, my head reeled and my hands grew icy as I swung myself through that trap door and felt for a footing on the swinging ladder. Suppose Fraser turned the ray back on us as we climbed down? Suppose he cut the ladder? But instantly my good sense told me he would do neither. If he had meant to kill us he could have done it easier than this. No, somewhere in his mad head, he had a reason for sending us down to this swinging cabin.

Five minutes later Foulet and I stared at each other in the cramped confines of our prison. The tiny door in the roof, through which we had dropped, was closed. The steel ladder had been pulled up. We were alone. Alone? Were there no eyes that watched us still, or ears that listened to what we might say? Foulet evidently shared my sense of espionage, for, without even a glance at me, he lay down on the hard floor of our bare little cabin and, to all intents and purposes, fell asleep.

For a few minutes I stood staring at him, then followed his example. As I relaxed I realized I was tremendously weary. The cumulative exhaustion of the past thirty-six hours seemed to crowd upon me with a smothering sense of physical oppression. I looked at my watch and wound it. Five o'clock. Through the narrow slits near the roof of our swinging cell I could see the changing light of dawn, melting in with the rosy glow from the magnetic rays. My eyelids drooped heavily....

When I awoke Foulet was standing near me, his arms folded across his chest, scowling thoughtfully. He nodded as he saw my open eyes, but when I started to speak he shook his head sharply. With his gesture there flooded back to me the feeling that we were watched—even through the walls of our aerial prison and the floor of the platform above us.

I SAT up and, clasping my knees with my hands, leaned against the wall. There must be a way out of this for us! All my life I had worked on the theory that if you thought hard enough there was a way out of any difficulty. But this seemed so hopeless! No matter how hard we thought the mad mind of Fraser would always be one jump ahead of us! And maybe we didn't dare even think! If Fraser were able to read minds—as I was nearly sure he was—then hadn't we better keep our minds blank even down here? But an instant's thought showed me the flaw in my logic. Fraser could, without much doubt, read minds—when those minds were close to him. If he could read minds at a distance then he wouldn't need to ask us for information.

But why had he put us here? I burrowed around for the answer. Had he guessed we had outwitted Doctor Semple and not taken the mad serum after all, and was this punishment? No, if Fraser had guessed that he would simply have given us more serum, as he had Brice. Brice! Where was poor Brice now? Was he an idiot, with blank face and shiny, soulless eyes? My mind shuddered away from the thought, taking refuge in my first question: Why were we here? What was Fraser going to do with us?

We lost all track of time. In spite of my winding it my watch stopped and the hours slipped by uncounted. Night came, and another dawn and another night. Twice our roof was lifted and our tiny swinging cell filled with the orange light of the nourishment ray. But we saw no one nor did anyone speak to us. The third day passed in the same isolated silence. Occasionally Foulet or I would utter a monosyllable; the sound of our voices was comforting and the single words would convey little to a listener.

But as the hours of the third night slowly passed the atmosphere in our tiny swinging cell grew tense. Something was going to happen. I could feel it and I knew by Foulet's eyes that he felt it too. The air was tight, electrical. Standing on tiptoe, I glued my eyes to the narrow slit which was our only ventilation. But I could see nothing. The brilliant rosy glow blinded me. I couldn't even see the huge platform floating above our heads.

Then, suddenly, our roof slid back. The magnetic ray was deflected. Above us, in the opening of the trap-door, leered the bright, mad eyes of Fraser.

"Good evening," he said mockingly. "How do you feel?" We smiled hesitantly. Something in his voice made me feel he was addressing us as sane men and not idiots. But why? Weren't we supposed to be idiots when he put us down there?

"You ought to feel all right," Fraser went on critically. "The first dose of that serum lasts only three days. It's cumulative," he added with his professional air. "In the beginning an injection every three days. Then once a week and so on. There's a man who has been with me for three years who needs treatment only once every three months. Well, are you ready to talk?"

SO that was it! He had put us down here till the supposed effects of that serum had worn off; and now we were to talk; tell him everything his agents had been risking their lives to find out! We were to sell out our countries to him; betray all the secrets we had sworn by eternity to keep! If we did as he demanded both France and the United States would be at his mercy—and he had no mercy! He was not a man; he was a cruel, power-loving, scientific machine. I clamped my teeth. Never would I talk! I had sworn to protect my country's secrets with my life—and my vow would be kept!

"You will talk?" Fraser asked again, his voice suddenly suave and beseeching. "For those who talk there are—rewards."

"Let down the ladder," said Foulet, in a quiet, conversational tone. "It will be easier to discuss this—"

Fraser's eyes narrowed to gleaming slits. He smiled craftily. "The ladder will be let down—when you talk."

"And if," suggested Foulet, "we don't wish to talk?"

Fraser's lips stretched in a wider grin. His white teeth gleamed. His shiny black eyes glittered. In that warm, rosy light he looked like a demon from hell. He held out his hand. In it shone a long, slender instrument.

"This knife," he said softly, "Will cut the steel cables that connect you to this platform—as if they were cheese! You will talk?" Beside me I heard Foulet gasp. Swiftly my imagination conjured up the picture of our fate. Our determined refusal to divulge the secrets of our respective countries; the severing, one by one, of the four cables holding us to the platform; the listing of our swinging cell; the tipping, the last, terrible plunge two thousand feet. But it would be swift. The power of the magnetic ray would give us no time to think—to suffer. It would be a merciful end. . . .

"Let us up," bargained Foulet. "We will talk." Fraser laughed.

"None of that," he said slyly. "You talk from there, and if your information doesn't dove-tail with what I already know—" he flourished the steel knife suggestively.

WE were caught! No amount of bluff would save us now. Fraser demanded that truth, facts, actual information—and he wouldn't be fooled by anything spurious. Foulet's shoulder touched mine as we peered up through the roof of our cell at our mad captor. We spoke together:

"There is nothing to say."

The assured smile left Fraser's lips. His eyes glittered red. His whole mad face was contorted with fury. A volley of oaths poured through his twisted mouth. With a gesture of insane rage he pulled the nearest cable to him and slashed it with the knife!

Our cell tilted. Foulet and I were thrown in a heap on the floor. We sprang up to face Fraser again through the roof. His mad eyes glared down at us, soul-chilling, maniacal.

"Talk!" he snarled. "Talk—or I'll slice another!" He drew the second cable to him, holding it in readiness.

I clenched my teeth. Beside me I could see the muscles of Foulet's jaw working. Talk? Never!

"Talk!" screamed Fraser. "Talk!" Our silence and our white faces were his only answer. There was a gleam of the knife in the rosy light. Our cell lurched, quivered, then caught. Would it hold with only two cables? It was hanging on its side. We were standing on what had been the wall. Through the opening in the roof we could see nothing but rosy light and distant stars. How strong were the cables? Could they hold against the pull of the magnetic ray? We could feel the pull now; feel the strain on the cables above us. If Fraser cut the third one—

"Talk!" his voice came, hoarse with fury. "Talk now! You can't see me," he went on; "but I'm pulling the third cable toward me. I'm raising the knife. Will you talk?"

Standing on that quaking wall Foulet and I stared at each other. How long would it be? One second? Half a minute? Thank God it would be quick! This was the worst now. This eternity of waiting. . . . "I'm cutting it!" yelled Fraser—and with his words the cell lurched, swung, whirled like a spinning top. Foulet and I were tossed around like dried peas in a pod.

Suddenly the thing steadied. Two steel hooks were clamped on the edge of the opening in what had been the roof, and Brice stared at us through the aperture!

"Quick!" he gasped. "There's not a second to lose. Don't stare! Quick, I say. I've got the ladder here. It's steel and it'll hold. Climb up."

DUMBLY we obeyed. Our heads were whirling, our bodies bruised and mashed by the shaking up. Blindly, dizzily we climbed up the ladder, scrambled out on the platform. Solid footing again! As Brice loosed the ladder and pulled it up, there was a snap. The last cable had gone! The cell shot down to earth with a speed that must have reduced it to a powder. Foulet and I stared after it, dazed, unbelieving. Brice's whisper hissed in our ears.

"Listen carefully," he gripped our shoulders. "I'm not mad. They shot the stuff into me, but I found an antidote in Semple's office and used it right away. Now listen to me! Our plane is over there," he pointed across the platform. "It's all ready to take off. They think they're sending me off on an errand for them at dawn. It's ready for a long trip. Go there; get in; and if any one questions you tell them it's orders. They won't, though. No one gives orders here but Fraser." Brice nodded toward a dark heap beside the trap-door.

"You killed him?" asked Foulet.

"Stunned him," said Brice. "He may come to at any moment and if he does—"

"Suppose we bind him and take him in the plane?" I suggested.

Brice shook his head. "Leave him here. It's safer. Now go. Get in the plane and take off—"

"And not wait for you?" I gasped, "You're crazy—"

"I'll be there. You can pick me up later. There's no time to explain—but you'll know. Take off; then circle around and come back. But watch out!" He gave us both a shove toward the plane, the dim shadow of which we could see across the platform.

We took a step toward it, and then turned back. How could we go without Brice? But he had vanished. And in the shadow of the trap door Fraser groaned.

We waited no longer. To hesitate was to court death. Deliberately, as if we were acting under orders, we walked toward the plane. As Brice had said, it was in readiness. Evidently he was to have started at once. We climbed in, our hearts in our throats. A mechanic stepped forward. The propeller roared. But, above the roar of the propeller we heard a yell of fury—and Fraser, dazed and reeling, came stumbling across the platform toward us!

FOULET took the controls. The plane taxied across the platform, swooped into space. But it was not till it had risen and steadied that I realized the complete idiocy of our forlorn hope of escape. What fools we were! And Brice—Brice must, in truth, be mad! How could we get away? How could we ever escape the terrific power of the magnetic ray? That ray that Fraser worked himself from his laboratory—the ray that had drawn us first across the desert to this floating island of madness! It would be a matter of seconds before Fraser would reach it and turn it on us. There was no escape—none!

In despair I looked back at the platform. To eyes ignorant of its horror it would have been an amazing and gorgeous sight. The crimson lamps of the magnetic ray bloomed like huge desert flowers on the sand two thousand feet below us; the rays flamed up with the glory of an Italian sunset and, poised in space like a dark butterfly, floated the huge platform bathed in its rosy light. It was beautiful. It was unbelievable. It was horrible. I gazed, fascinated. When would Fraser reach the lamp? When would he turn it on? I stared at the dark shadow that I knew was the laboratory building. My eyes strained through the growing distance. When would the glow come? That glow that meant our death!

Suddenly I gasped. The light had gone! The great lamps down on the desert floor were out! Darkness, swift, comforting, wrapped us in velvet folds.

"Brice!" I yelled, "Brice has cut off the lamps—he's released the platform. God! Look—Foulet!" My voice tore through my throat; my eyes burned with sudden, blinding emotion. In the soft darkness of the starry night I could see the platform waver, topple, rise! It rose straight up, tilting and swaying in the light breeze. What was it Fraser had said? If it was released it would go straight to the stars! It was on its way!

But Brice! Where was Brice? Was he on that terrible rising island? I strained my eyes through the darkness. Already Foulet had banked the plane—we were circling; turning back. A tiny white speck took shape beneath the rising island. A parachute! Brice was safe!

TEN minutes later we slid along the hard desert sand and came to a stop. Brice came running over toward us. Foulet and I climbed out of the plane to meet him. Silently we gripped hands. It was a solemn moment. Beside us reared the great plane that would take us back to safety—back to the familiar life we knew and loved. Around us stretched the trackless wastes of the Great Arabian Desert—and above, somewhere between us and the stars, soared the floating island of madness.

"They believed I was mad," said Brice as we climbed back into the plane. "I watched Fraser. I spied on the men. There were about thirty up there, and finally I saw where they regulated those lamps. The rest was easy—all except the minute when I found Fraser kneeling beside that trap-door slicing the cables. For a second I thought it was all up."

"You got us just in time," I muttered. But you can't be grateful with an Englishman. They won't stand for it.

"Oh, bosh," Brice murmured, as the plane swung its nose toward that far distance that was home. "Well, it's all over—but it's a story that can never be told. The fate of Mad Fraser will have to remain a mystery—for no one would believe us if we told them!"

For the Transmutation of the Elements

THE transmutation of the elements through the use of giant electro-static machines has been given added impetus by the discovery of new methods for the construction of these machines. Dr. Van de Graaff, of Princeton University, pioneer in this work, has been able to construct a generator which is capable of producing a potential of a million and a half volts. The principles involved may be applied to the construction of similar machines of ten times the size, and it is hoped that generators producing fifty million volts will soon be realized.

Now under construction is a static machine capable of producing 10,000,000 volts at the terminals. The terminals of these machines take the form of brass spheres several feet in diameter which are insulated from the ground by stout glass rods. A belt conveyer operated by a motor at the base of the terminal support serves to charge the sphere, the belt passing over a pulley within the sphere. The charge is produced upon the belt by what is known as the "brush" or "corona" effect, and though of comparatively low voltage, the potential builds up upon the surface of the sphere to the desired pitch. When fully charged, each sphere assumes a similar potential, but, as they are of opposite sign, the total voltage is doubled. As the maximum is reached, a giant spark, like a flash of lightning, takes place between the spheres, which are thereby discharged.

The construction of larger machines will necessitate minor changes. For instance, the operator of the apparatus will be seated within one of the spheres, being better protected there against the enormous voltage than he would be at any other point in the vicinity of the machine. The experiments have necessarily been quite expensive in the past, but with this new type of construction it is possible to build one of the "small" 1,500,000 volt generators for about $90.

The new generator is expected to give science a new tool with which to "smash the atom." At present this is done by bombardment by the alpha particles from radium.

IN THE NEXT ISSUE

Salvage in Space

The Exciting Story of What Happened When a "Meteor Miner" Boarded a Mysterious Derelict of Space

By Jack Williamson

The End of Time

An Unusual Story Based on What Might Happen If Man's "Time-Sense" Were Paralyzed

By Wallace West

The Man in the Bottle

The Mere Name of This Story Speaks for Its Fascinating Bizarreness

By Le Grand Traverse

Triplanetary

Beginning One of the Finest and Most Outstanding Novels of Interplanetary Invasion and Warfare of the Future That Has Ever Been Written—the Full First Half, Complete in One Instalment—

By Edward E. Smith, Ph.D.

—And others!

Two Thousand Miles Below

By Charles Willard Diffin

Conclusion

CHAPTER XXIII

Oro and Grah

"THE Place of Death!" said Dean Rawson. "Whoever named it had the right idea."

He looked out across the wide stretch of ground with its covering of white salt almost entirely stripped of the carpet of vines. The bodies of the mole-men lay where they had fallen; their flame-throwers still tore futilely at the earth or stabbed upward in vain, thrusting toward the green-gold sun that shone pitilessly down.

"Still I do not understand," said Gor. "My people pressed the strong, burning water from the vines and poured it into the pool as you directed. But the Red Ones did not touch it—how could it burn them?"

As part of their titanic plan, Rawson and Loah-San return to sacrifice themselves in the flaming caverns of the Red Ones.

"I'll say it was strong!" said Rawson. He looked at his hands, red and burned where the liquid had touched. "And it got stronger by standing. It was an acid, and when it touched the white earth a gas was formed—hydrocyanic acid gas. And that's nothing to fool with."

He walked cautiously out where the liquid had been poured over the white ground. No odor remained; the air was clean. Then he picked up one of the flame-throwers and experimented with it until he found the sliding sleeve that shut off the blast.

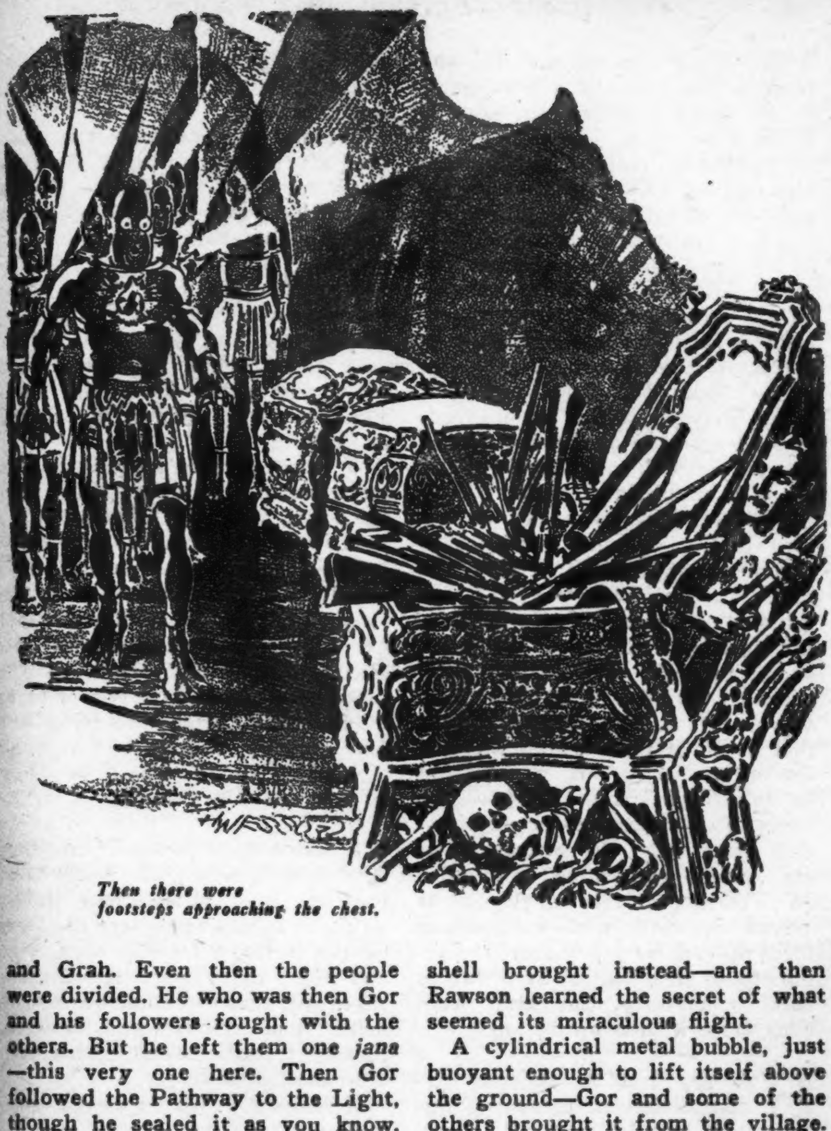
"All right," he called to Gor. "Bring on your men; we've got to clean up this place and get rid of the bodies before the sun gets in its work. They're the ones that will go into the ocean instead of you." He moved carefully along the straggling line of bodies, salvaging the weapons and turning off their fearful blasts.

They worked and slept and worked again before their gruesome task was done and Rawson was ready to begin the other work that he had in mind.

Beside the mouth of the great shaft, resting on the rocks, was a cylinder, almost exactly a counterpart of the one Loah had used. But this was larger—fully fifty of the red savages could have crowded inside.

"It is the only one they had," said Loah. "I have seen, and I know."

"But they can make more," Gor argued. "This one and the one we have," he told Rawson, "were made thousands of years ago. There were masters of metal-work among them, and they had learned to use Oro



Then there were footsteps approaching the chest.

and Grah. Even then the people were divided. He who was then Gor and his followers fought with the others. But he left them one *jana*—this very one here. Then Gor followed the Pathway to the Light, though he sealed it as you know. But—but they will build others. Sooner or later they will come."

"I think not," said Rawson. "Now what about this Oro and Grah material? What was it you called them—the Sun-stone and the Stone-that-loves-the-dark? I must know how they work." But Loah was reluctant to experiment with the *jana* of the Reds; she had her own shell brought instead—and then Rawson learned the secret of what seemed its miraculous flight.

A cylindrical metal bubble, just buoyant enough to lift itself above the ground—Gor and some of the others brought it from the village. Gor brought, too, a little box which he carried with great difficulty.

"IT is Grah," he said, when he showed Rawson a little scattering of black dust within the box. "Always it tries to fall back under the ground. Both Oro and Grah grow deep down near the Zone of the Fires; we find them in the caves, Oro on one side and Grah on the other. Oro is as heavy in its upward falling as Grah is in its downward.

"Then"—he pointed to the central vertical tube in the shell—"we put both of them in here, bringing it a few grains at a time. One falls to one end and the other to the other. And then, with these simple valves, we let out a little of whichever we wish—release it a grain at a time, if that is best. We let out a few grains of Grah, and Oro, being stronger, draws us upward; or we let a little of the Oro escape, and we fall downward swiftly. You see it is simple, as I said."

Rawson's reply was not an answer to Gor so much as it was an argument with himself. "Heavy," he said. "Specific gravity beyond anything we've ever known. Osmium, the heaviest substance we have, would be light as a feather compared to this. But wait. This Grah, as you call it, falls downward, but that means it falls toward the outside of the earth. With us it would be light—light! And Oro would be heavy. New substance—new matter! One feels only the attraction of our normal gravitation; the other doesn't react to that at all, but is driven outward with tremendous force by counter-gravitation, the repulsion of this Central Sun. You've used it cleverly, but we'd have done more with it up on top."

HE was lost in thought for some minutes, muttering figures and calculations half aloud. "Two thousand miles from the Central Sun to us; two thousand more through the solid earth. And if that repelling force follows Newtonian laws it will decrease as the square. . . . But, coming down from up on top, normal gravity would decrease directly as the distance!" He made scratches with one small stone upon a larger one in lieu of paper and pencil, but, to his listeners, his muttered words could have meant nothing.

"Around six seventy—six hundred and seventy miles to the neutral zone, the Zone of Fire. And a column of water—it would carry on by, plug the shaft, check the back-pressure, and then. . . ." For the first time since that night when the mole-men had poured out into the crater, his eyes were alight with hope, though his face seemed tense and grim. Then the lines about his lips relaxed; he smiled at Loah.

"I would like to investigate this under-world," he said, "—not very far down. Will you take me?"

The girl's adventurous spirit had led her on many exploring trips in that subterranean world. She laughed happily when Rawson told her what he wanted. "But, yes," she said; "of course I know such a place." And from some two or three miles below, after anchoring the *jana* securely, she led him through a winding tunnel where he knew he was steadily climbing.

IT was a wide corridor that they followed, where the walls came together high above their heads; he could hardly see where they met by the light of Loah's torch. Now and then there were lateral passages, but they were narrow, hardly more than cracks; and Rawson, looking into them, nodded his head with satisfaction.

Occasionally his footsteps rang hollowly on the stone, and he knew that the floor was thin between this and other caverns below. "What an old honeycomb it is!" he exclaimed. "And we had it all figured as being solid. The weight is all here, of course, but it's concentrated in that red stuff down near the neutral zone. But anyway, Loah has shown me just what I wanted."

He had gathered a handful of little fragments, and, keeping count of his steps, had shifted a bit of rock to his left hand for every hundred paces. By this he knew they must have gone five or six miles when he reached the tunnel's high point. Many times it had widened. Here, too, was a cave more than a hundred feet across.

From the farther side, the tunnel continued, pitching sharply downward, but Rawson did not explore farther. "I can seal that off with a flame-thrower," he said. "I've seen how they use them." Then he took Loah's light and looked with every evidence of approval at the rocky walls and the roof that seemed heavy with dew.

He had wondered about the air, but he found that it seeped through from that central shaft, although Loah told him that in some deeper passages the air was bad. Here, although it was moving gently, it seemed wet as if charged with moisture. Rawson, staring upward, felt a drop strike him in the face, dripping from the rocks above.

"It's a gamble," he said, "just a gamble. But the stakes are worth while. And now, Loah-San, we will return."

HE made crude work with the flame-throwers at first but finally he got the knack, and the mouth of the tunnel beyond the big room was sealed. Then, with the help of Loah and some few of the others, he brought in more and more weapons of the Reds. He was curious as to their construction, but his curiosity had to go unsatisfied. They were only cylinders, so far as he could see, cylinders a foot long and six inches through, of some metal with the dull lustre of aluminum. But they were sealed, and he dared not cut one open with another flame-thrower for fear of what might come forth.

On the top of each cylinder a tube was connected that ended in a lava tip; but at the base of the tube, where it joined the cylinder, was a sliding sleeve that checked the flame to nothing when it was moved, or opened it to the full blast.

He had a hundred of them in the room when at last he was through—one hundred fearful instruments of destruction. And still he told no one of his plans; he only told Gor what he wanted done later on. "It may not work," he had to admit to himself. "I'm just guessing at the thickness of the rock and the power of these machines. It's a gamble, nothing but a gamble."

He arranged the flame-throwers in a circle along the outer wall. The tops of the cylinders were curved, but the bottoms were flat and they set solidly on the rock. But he tipped them backward and braced them firmly with fragments of stone until every crooked-neck tube was pointed upward and toward the center. Finally he was done.

IT was only a matter of a few hours later when Rawson stood on the island's end by the mouth of the shaft. In his ears was the ceaseless rush of the air as it entered the pit; it was the only sound in a silent world. And for the first time there came overwhelmingly upon him a realization of what this moment meant.

The time had come. Loah was beside him, her lovely eyes unnaturally bright in her face from which all the blood seemed to have flowed. He felt the slight trembling of her body as she pressed against him; he knew she was struggling to keep back the tears. Then Rawson half turned with one final entreaty that she let him go alone; but he left the words unsaid—he had argued it several times before.

Before them stood Gor, then the Wise Ones, the Servants of the Mountain, deserting their post for the first time since the Mountain had been given a voice. Beyond them all the people of this little world were gathered.

It had seemed only a fanciful dream, this thought of going; in fact, he had been too busy, too pressed with his own preparations, to give it thought. Now he was learning to his own surprise how closely he had identified himself with this world and its people. It had given him Loah; it had been a haven, a sanctuary.

He let his eyes slowly take in the full splendor of that emerald sea, the shining land under a green-gold sun, the Mountain in white, crystal purity against a green-blue sky. And he was leaving it, he and Loah; they were going to—death!

"YOU will remember," he said to Gor. His voice sounded dull and heavy; it hardly seemed himself who was speaking. "You know the day and the hour. This is the nineteenth. It is now noon—twelve o'clock in my world. When the Voice of the Mountain says that noon again has come you will do as I said."

"The Mountain speaks without ceasing now," said Gor, "telling always of what the Red Ones do. We will count the hours as they pass. In twenty-four of those hours Gor will descend in the *jana* of the Reds to do as Dean Rah-Sun has commanded."

Rawson held out his hand. He was suddenly wordless. Then Loah threw herself into Gor's arms in one last passionate embrace—but it was she who entered the *jana* first.

"Come," she said to Dean. "Oh, come quickly, Dean-San!" Then he, too stepped inside and made the heavy door fast.

Men of the White Ones had been holding the big cylinder down. But Rawson, staring through the window, saw that it was Gor's own hands that swung them out at last above the pit.

Their craft hung quivering for an instant in the rushing air; then Loah moved one of the levers a trifle and the blackness took them, and only the little bull's-eyes in the metal ceiling showed the fading glow of the Inner World, the home of the People of the Light, which their eyes never again would see.

CHAPTER XXIV

The Bargain

RAWSON had taken one flame-thrower with him. He tied it securely inside the shell so it could not shift with the changing gravity, or be accidentally turned on. Again he clung to the curved bar against the wall. Loah stood at the center, directing the craft.

Once again he floated in air, then found himself standing on what had been the ceiling of the room. The girl had released a considerable quantity of the lifting element in the *jana's* end, and now the black powder in the other end of the central tube was dragging them at terrific speed as it rushed away from the earth's center.

Over six hundred miles, Rawson had figured, from that inner surface to the neutral zone where the red substance of the earth, that was neither rock nor metal, under terrific pressures, glowed with fervent heat or formed pools like the Lake of Fire.

Perhaps a hundred miles thick, that zone of incessant energy, and their little craft tore through it at tremendous speed. Even so, he was gasping for breath in the heated room when the glow faded and again he swung over and down upon the floor as Loah checked the speed of the flying projectile and the little ship crept slowly up into the room where first he had seen it.

The first that he noticed was the absence of the roar. The *jana* drifted slowly to one side, and Loah let it come to rest upon the floor. Staring from the open door, Rawson saw the same familiar red walls and floor and the black opening of the shaft from which they had come. But the reverberating roar of the great organ-pipe was gone. He knew that the air, for the greater part, was driving on past through the upper shaft that was now open. The way was clear for them to ascend. He turned to the girl.

"IF my figures are right, it's some thirteen hundred miles from here on. How did you get up there before?"

Loah pointed to the passage where the *jana*, on that other excursion, had been hidden. "We went through there," she said, "taking the *jana* with us. We went up many miles through a great crack, but it was not straight; we had to go carefully till another passage opened through to the shaft far above where it was sealed."

"And the mole-men never found it?"

"Oh, yes," said Loah, "they must have known of the crack, but they did not know where it led. Its air was bad—a gas that choked; one could not breathe it and live. But in our little *jana* we were safe. They could not use theirs; it was too large. Besides, only the priests came down. They had their Lake of Fire, where they did horrible things. They did not know that the shaft began again below."

"O. K.," said Rawson, and closed the door.

"But I wish to get out," Loah protested, "to gather more of the Oro. We may need more, should we return."

"We will never need it," Rawson spoke softly. "From the time we left Gor we had just twenty-four hours to live. We must go on, and go fast."

THEY had no way of measuring time, and Rawson could only guess at the hours that passed while their little ship tore swiftly upward through the dark. He wondered if the occasional shrill shriek that followed the touching of their metal guides on the glassy walls could be heard up above.

Then, at last, Loah was driving the *jana* slowly while she held her light so it would shine through a window. Rawson had to restrain himself to keep from pacing the little room like a caged animal while the precious minutes slipped by. Now that the enemy was near he wanted nothing but to drive on up to the end of the shaft, come out into that world wherever the shaft ended, then try to fight his way through to the great hall where he hoped to find Phee-e-al. And his haste made him overestimate the passing time; their journey had been swifter than he knew.

"I may have passed it," Loah was saying doubtfully. "I may have come too far." Then she interrupted herself and sprang to the controls.

They drifted slowly back. "It is different now," Loah said; "the air rises more swiftly than before." She stared from the window while she drove the *jana* slowly up and down, trying to bring it to equilibrium in the strong up-draft.

The air entered the shell through a little opening with the same pungent tang Rawson had noticed before. He had wondered about the air. Down near the neutral zone it was dense, yet he had not minded the pressure too greatly—and that had been puzzling.

"Rock pressure and air pressure," he had reasoned; "they are two different things. If the rock flowed, any air that it trapped would be squeezed to a liquid. But it doesn't flow—that red stuff is solid; so the air pressure is only the weight of the air column itself. But even that should be enormous."

He could only conclude that the lessened pressure came from that strange counter-gravitation, the repelling force from the center of the earth. Perhaps it tended to dissipate the molecules, held them farther apart, prevented their squeezing in together, and battering with a thousand little impacts on a point where one had hit before.

Their *jana* swayed gently as if the smooth air currents were disturbed and were drifting them sideways; and then, at last, Loah, peering from a window, sprang back and moved a lever. Beneath them was the softly-cushioned thud of the shell seating itself on firm rock.

THEY were in another of the interminable caves, Rawson found when he opened the door. The *jana* was resting a few feet in from the edge of the shaft. Cautiously they got out, but even without their weight it had a slight negative buoyancy.

"Oro is pulling more strongly than Grah," Dean said, and smiled. Already the names seemed familiar to him.

The two lifted the *jana* and carried it back some twenty feet more before Rawson realized how unnecessary this was.

"We'll never be using it again," he said. "If I've guessed right it will stay here as long as the rocks; if not—but we'll never know the difference anyway."

He took the flame-thrower from the car in sudden haste. "Quick, dear," he told Loah. "God knows when the end will come. Quick, show me the way."

Loah knew every step of the route that took them on and upward through a maze of twisting passages, and Rawson marveled at her sense of direction. She flashed her light at times—the little bar of metal that had in one hollow end a substance which absorbed the light-energy of the Central Sun. Rawson knew how it worked. Even the lights in the mountain room were taken out from time to time and exposed to the sunlight that brought them back into glowing life. He had seen similiar phenomena on earth. But, for the most part, Loah kept the little metal cap in place on the end of her torch, and they moved cautiously through the dark.

SOUNDS of the Red Ones came to them at times. And once they hid in a narrow branching cleft that came abruptly to a dead end, while a force of red warriors marched hurriedly through the passage they had just left. Back in their hiding place Rawson stood tense and ready with his weapon till the last of the enemy was gone.

Always he was frantic at thought of the time that was slipping past—until, at last, the narrow passage that they followed cut transversely through another large runway that glowed faintly from some distant light.

With that first gleam of light there came over Dean Rawson an odd change. Something within him had been cold with fear. Fear of the flying minutes. Fear that Loah might have lost her way in this tangled labyrinth of winding ways. And now, suddenly, he was carefree, filled with an absurd joy. Nothing mattered. They were to die, but what of that? Loah had chosen death; he would see that when it came to her, it would be quickly and without pain. And as for himself, if before he died he could remove this ruler of an enemy race. . . .

So when Loah leaned close and whispered, "The light—it shines from the council room of Phee-e-al," Dean replied almost gaily; "I've got to hand it to you—you sure do know all the back alleys." Then he stuck his head cautiously out into the dimly-lighted corridor.

It was broad. He saw where their own little passageway went on from the opposite side. But the light—the light! At his left, not a hundred steps away, was a room, brilliantly lighted. And across it, in gleaming splendor, stretched a low wall—a barrier of gold. It was the council room, where once before he had faced Phee-e-al in all that savage's hideous splendor.

HE listened. All was silent. Then Loah whispered: "Phee-e-al comes this way when he goes to the council room. But when he comes, or how often, I do not know."

Dean pressed her back into the narrow way with his hands. "Wait here!" he said, and gave her the flame-thrower. "I've an idea!" He stepped softly out into the broad passage and on naked, noiseless feet, moved swiftly toward the lighted room.

It was empty. Beyond the barrier were no red figures, nor were there whistling voices to echo as he had heard them before. Here was the throne where Phee-e-al had sat; here the priests had stood; there, along the wall, were the chests.

Fully twenty of them, each eight feet long, they stood ranged along the three walls of that part of the room protected by the barrier. No two of them alike; all of them were oddly carved and studded with jewels.

The chests were ranged in a straight row a foot or more out from the wall. He crossed to them swiftly. About here was where that priest must have gone. He raised one of the heavy lids till the light struck within.

Bones! Only fragments of a skeleton, blackened by age; a necklace of teeth from some animal's jaw; worthless trifles for the mummery of the priests. Then, beneath them, he saw two great fangs, a foot in length. They were curved, sharply pointed and yellow as old ivory.

What was it Gor had said of legends that told of ancestors coming from the outer world? Rawson knew that he was looking at priceless relics of the tribe, at the tusks of man's long extinct enemy, the great sabre-toothed tiger.

BUT he had neither time nor thoughts to spare for marvels new or old—he must find his gun. Yet, even then, he wondered what undreamed-of treasures the other chests might hold—what jewels, what paraphernalia of ancient kings.

He must be silent! Perhaps the next great glittering container might hold the blue gleam of his gun. And this time as the gem-studded lid was swung upward and back to rest noiselessly against the rock wall, Dean could not repress the audible gasp that came to his lips.

His own pistol! He had expected to find the one weapon, but, instead, the chest was filled with all it would hold of rifles and side arms and cartridge belts, all mingled in one indiscriminate heap.

They were twisted, some of them, and bent; discolored, too, evidently by flames. On some the stocks had been burned off.

Rawson's hands were suddenly trembling. There was one rifle that seemed unharmed; he brought it out, and hardly heard the little clatter that it made among the other weapons. An ammunition belt—he slipped out a clip of cartridges, made sure they fitted his gun, and threw one up into the firing chamber. He was fumbling for more of the clips when there pierced through his tumultuous thoughts the realization that he was hearing sounds not made by his own suddenly clumsy hands.

MARCHING feet, whistling voices—they came from beyond the room's farther end, beyond the entrance through which he had once been brought a captive. He took one step back toward the broad tunnel, then knew there were others coming there.

There was no possible avenue of escape. He threw himself in one wild dive into the narrow space between the chests and the wall, and pulled himself forward under the shelter of the one back-turned lid. The rifle was still gripped in his hands.

By the sounds that came to him, he knew that the outer room had filled with red warriors, and that another smaller group had come scuffing from the passage where he had just entered. And, by the echoing cry of shrill voices that shouted, "Phee-e-al! Phee-e-al!" he knew that the ruler was near.

Then there were footsteps approaching the chest. A priest no doubt; shrill whistling told of his anger. The concealing cover was jerked outward and down, and Rawson, staring above him, saw not the coppery face that he had expected, but the hideous white visage of Phee-e-al himself.

For an instant the ruler of the mole-men stood half stooped in petrified astonishment, and in that moment Rawson dragged himself to his feet. No chance to use the gun—the other was upon him, his gripping talons tearing Rawson's bare flesh. In one flashing thought, Dean cursed himself for the uselessness of his weapon—he should have taken a pistol, an automatic. Then, body to body with the savage, he was dragged out over the chest.

HE had been holding the rifle above him, as he struggled from his cramped quarters. The savage had grabbed him about the shoulders, but his hands were still free; they held the gun on high. And in the second when he found his feet under him, as Phee-e-al dragged him clear of the chest, Rawson brought the breech of the gun crashing down upon the pointed skull.

He felt the talons release their hold. The priests were rushing upon him. Phee-e-al, too, had been only momentarily stunned—he was springing! Then Rawson whipped the rifle down in line, and the clamoring shrieks that filled the room with tumult were drowned under another roar.

He saw Phee-e-al fall. Even then, through all the pandemonium within his own mind, he thrilled with satisfaction at sight of a little dot and a spreading stain above Phee-e-al's heart, where only bare skin had been before.

The next shot took the foremost of the priests. The others paused, hesitant for a moment, ranged out in an irregular line. Past them, beyond the golden barrier, Rawson caught a confused glimpse of a sea of red faces. Green flames were stabbing upward from their ready weapons. The priests were between him and them, and there came to Rawson in that instant, through all the chaos of fighting and half-formed plans, the knowledge that these priests were a living barrier that held off the flames.

He fired once more to check

them, then sprang for the wide entrance of the tunnel. He fired again back of him, shooting wildly as he ran, then saw Loah as she came from her hiding place with the flame-thrower ready in her hand.

"Quick!" he gasped. "Get back!" Then, with her, he was running stumblingly through the dark.

THERE could be no escape; even while they fled he knew it. And yet they almost made it—though the end, when it came, was one that neither could possibly have foreseen.

They were following a wide passage, one of the countless thoroughfares of the Reds. It was deserted. Loah flashed her light freely. Ahead of them the passage turned. Just short of that bend was a rift in the rocks.

"There!" Loah gasped. "Turn there. It will take us back to the *jana*." But the words were followed by a flash of green from dead ahead.

The flames that made it came quickly after and a dozen of the red warriors were before them, the light of their weapons slanting just above Rawson's head. His rifle was half raised—they would at least fight to the last. Then he realized that the green death was not swinging downward.

From behind them, in the corridor through which they had raced, came a chorus of whistling shouts. Rawson whirled to find more of the red fighters, and again, though their hissing green flames were held ready, they did not descend.

A priest, copper-colored, shining resplendently in the weird glow, detached himself from the group and stepped forward under the protection of their weapons. Loah's hand was depressing the muzzle of Rawson's rifle. "Wait!" she said. "He wishes to speak."

THE priest stopped and addressed them. Loah answered; and to Rawson it seemed horrible that her lips and throat should be called upon to form those whistling words. Then she turned toward him.

"He says they will not harm you now if you surrender. Later, when they select a new ruler, he may order you set free."

Rawson was doing some quick thinking. The priest was lying, clumsily, childishly, but it might be he could bargain with them.

"Tell them this," he ordered Loah: "they are to let you go free—let you go right now! If they do that, I'll lay down my gun. If they don't, that priest will die before they get me. I don't think you can make it," he added, "but go back to the *jana*. Don't stop for anything. Drive it as fast as you can; you may still get there before Gor does his stuff. And take the flame-thrower in case you are followed—" He stopped; Loah was laughing.

"Did you really think, Dean-San, that I would desert you?" Again she laughed softly—laughing squarely in the face of that waiting death, a laugh that was half a sob, that caught suddenly in her throat as she stared at Dean.

He could not read the look in her eyes as their expression changed. "Yes," she said slowly, "yes, you are right. If I stay we both die, quickly."

Again her voice made whistling sounds; the priest replied. Then Loah threw her arms around Dean and kissed him. He was gripping his rifle; before he could take her in his arms, she was gone. She walked swftly, the flame-thrower in her hands, toward the dark cleft in the rocks, through which she disappeared. And Dean, though she had done what he really wished, felt that all of his life and strength had gone from him with that fleeing figure.

He placed his rifle on the floor and, straightening, held out his empty hands; the priest's talons were upon his flesh.

"But I got Phee-e-al, anyhow," he was thinking dully.

CHAPTER XXV

Smithy

SCARCELY more than a vault in the solid rock, the room where Rawson lay. He had seen it for an instant when the priest, after tying his hands behind him, had hurled him viciously into the room. It had but one entrance, though up high on one wall was a crack some two feet in width that admitted fresh air. A little room, only some twenty feet square; but he would not suffocate—the priests did not intend that he should die—not yet.

He saw one of the giant yellow workers bring a big metal plate. He put it before the doorway; then, by the red glow, he knew that they had sealed him in.

"I got Phee-e-al," he thought. "I did that much to help. That may put a crimp in their plans, check the invasion up above. But Gor didn't do as I told him, or it didn't work. The twenty-four hours must have gone by."

Then, even in that thought, he found happiness. "That means that Loah is safe," he told himself. "The shaft is clear; she's on her way back right now."

He pictured the *jana* falling swiftly through that dark shaft. He saw in his mind the beautiful figure of the girl, lithe and slender, standing at the controls.

About him was a silence like that of the grave; his blood pounded in his temples like a throbbing drum. It was some time before he knew that, with that throbbing, other faint sounds were mingled.

They came from the wall beside him, sharp tappings muffled by distance, the faintest whispering echo of rock striking upon rock. *Tap-tap . . . tap.* A longer pause. . . . *Tap.* They were making dots and dashes that blurred with the beating in his own brain.

In that dreadful silence he strained every nerve in an agony of listening. There was nothing more.

He had been roughly handled by the savages. His whole body was bruised and aching, his thoughts hazy and blurred. "Woozy," he told himself. "Guess the old bean must have got a bad crack. Hearing things—mustn't do that."

Again he tried to picture the girl, speeding on toward that inner world. Was she thinking of him? Surely she was. He could hear her calling his name. "Dean," she was saying. "Dean-San." The words were repeated, an agonized, ghostly whisper—repeated again, "Dean-San—oh, Dean-San," before he knew that the sound was coming from overhead. Then a light flashed once in the little room, and he saw her face, looking down.

She was beside him an instant later. "Dean-San," she was saying, "did you think that I really would leave you?" She was pressing her lips to his. Uncovering her light, she worked frenziedly at the metal cords that bound his wrists, pausing only to repeat her caresses—and at last he was free.

"I reached the *jana*," she told him in hurried whispers, "and then I came up. Their great room, where the Pathway to the Light begins, was deserted. With a cord I pulled the lever, and the *jana* vanished. I could not leave it for them to use. Then I followed—I knew by the sounds where they were taking you. And now, what can we do, Dean-San? Where can we go?"

It was real! Loah was there beside him; he had her in his arms, his bruised, bleeding arms whose hurts he no longer felt. And then, through his mind, flashed the question: if this was real, what of the other—the rappings he had heard? Perhaps it hadn't been a dream.

He lifted a fragment of rock and crashed it against the wall from which those rappings apparently had come. Laboriously he spelled out his name, remembering the dots and dashes from earlier flying days when planes had been equipped with key-senders. He spelled it slowly and waited, while only the silence beat upon him and the blood pounded in his ears. Then he heard it. The answer came from a quicker hand:

"Rawson—this is Smithy."

But Smithy was dead! What could it mean? Slowly Rawson pounded out the letters of his question: "Where—are—you?" The answer dispelled his last doubt as to the reality of what he had heard.

It *was* Smithy. Others were with him, for Smithy said "we," and they were prisoners, sealed up in a living tomb. But where? Smithy did not know. He knew only that they were in a big room where the rocks had been shattered and molten gold spilled on the floor. There was a hole in the roof, but too small to get through—a round hole, about eight inches in diameter. And, at that, Rawson interrupted to tap out a single word.

"Coming!" he said, and turned toward Loah and the light.

The girl had found a metal rope in her wanderings; she had used it to let herself down into the cave. And now it was she who helped Dean to pull his bruised body up and into the narrow crack. Loah had clung to the flame-thrower; they found it where she had left it up above.

The tapping rocks she could not understand, but she knew Dean had a definite plan in mind when he whispered: "The room where you first found me—do you remember? Do you know the way?"

"I will always remember," she said simply. "And, yes, I know the way."

Rawson caught glimpses now and again of that broad thoroughfare along which he had once traveled, a prisoner of the mole-men. But Loah knew other and seldom-used passages that roughly paralleled it; and then, after a time, Rawson himself knew in what direction they must go.

He knew, too, that they had followed a circular route, and that the room in which he had been sealed was not a great way from the place in which Smithy was a prisoner. Yet this had been his only way to reach it.

When they came to a sudden sharp turn, he realized that they were close. Beyond that bend would be the branching, lateral tunnel that led to Smithy's prison.

The main runway had been deserted by the Reds. Stopping often to listen, starting at times into side passages at some fancied alarm, they had met with no opposition. But now, from beyond the angling passage, came the familiar shrillness of the mole-men's voices.

Again the two concealed themselves, but no one approached. "It's a guard we hear," Rawson whispered. "They're guarding that entrance where we must go. They're taking no chances on Smithy's escaping." Then he crept to the point where the passage turned, the flame-thrower ready in his hand.

He drew back. For the moment it seemed to him physically impossible to turn this weapon upon them. They were savages, true, but it seemed horrible to slash living bodies with a weapon like this. Then he thought of the devastation those same weapons had wrought among the people of his own world. His momentary hesitation vanished. With one spring he leaped into the open where, a hundred feet away, red bodies were massed, and the air above was quivering with the green jets of their weapons.

His own flame-thrower he had turned to a tiny point of light; now it roared forth in fury as he swung it forward. They had no time even to aim their weapons or to turn them on. They were stampeded by the astounding attack. And still Rawson sickened as he saw them fall.

There were some who, panic-stricken, dropped their cylinders and leaped for safety in a narrow branching way. Rawson knew he should have killed them, knew it in the instant that they vanished, but that momentary, uncontrollable revulsion within him had stayed his hand.

He rushed forward now, Loah still bravely at his side—past the fallen bodies, through the choking odor of burned flesh. Grabbing up one of the weapons that had been dropped, he thrust it into her hands and said: "Wait here. Stand them off if they come back." Then he was rushing up the side corridor toward a room where once, in a far-distant past, he himself had been confined.

The flame-thrower lighted the way. It showed him the metal plate and the smooth, glassy rock that had been melted around its edge. He pounded on the metal and shouted Smithy's name.

Voices answered from within—voices almost unintelligible for the wonder and unbelief and joy that made them a confusion of wordless shouts. Then he stepped back and turned the blast of his weapon upon the rock at the edge of the plate.

The metal sheet moved at last, its top swinging slowly outward. Its base was held by the gummy, hardening rock. Then it broke free and crashed to the floor, and the light of Dean's weapon showed through the black opening upon the blanched faces of men, where eyes were still wide in disbelief.

Though they were looking at one of their own kind, it must have taken them a moment to realize that the naked body, clad only in a golden loin cloth, and the hands that held one of the fearful, green-flamed weapons, were those of a human. Then one of them broke from the others, sprang heedlessly across the still-glowing plate, and threw his arms about the barbaric figure.

"Dean!" he choked. "Dean, it's really you! You're alive!"

And Rawson's voice, too, was husky as he said: "Smithy, I thought you were gone. The radio said they had got you, old man."

Then other khaki-clad bodies, a dozen of them, were crowding through the hot portal, and Rawson came suddenly to himself.

"Quick!" he shouted. "They'll be after us in a second. Follow me."

Loah was waiting. Her own flame-thrower spat a little jet of green; it was the only light. Rawson saw here she had gathered up the other weapons and had turned them off so that even their little light would not blind her as she kept watch down the dark passage.

"Do we want them?" Dean shouted to the others. And Smithy echoed the question:

"Do we want them, Colonel?"

Colonel Culver, his face almost unrecognizable under its smears of powder stains and blood, snapped a quick answer: "No. We outrange them with our rifles. They're only flame-throwers, not ray projectors. Beat it! Run like the devil!"

Rawson snatched Loah's weapon

and threw it with the others. It would be hard going, ahead—she must not be uselessly burdened. But he kept his own. Then with his one free hand he swept her up till she was racing beside him as they led the way.

"I should have kept the fire weapon," the girl protested. "I, too, can fight."

Rawson, speaking between breaths, reassured her: "Too heavy. Their guns will protect us—"

Behind them, a man's voice cried out once, a single, hoarse scream of agony; then the rock wall took the sharp crackle of rifle fire and threw the sound into crashing, thundering echoes.

CHAPTER XXVI

Power!

A GIRL whose creamy body was strangely unsoiled by smoke or grime, whose jeweled breastplates flashed in the light of her torch while the loose wrappings about her waist whipped against her as she ran. And Rawson, naked but for the golden loin cloth, running beside her. Then Smithy, and ten others in the khaki uniform of the service—it was all that was left of the fifty who had dared the depths. And now all of them were harried and driven like helpless animals in the burrows and runways of that under-world.

But not entirely helpless. Colonel Culver had been right: their rifles outranged the flame-throwers. And Rawson, looking past that first burst of rifle fire, saw the one flame that had reached them whip upward as its owner fell. Others of the Reds came crowding in after, and the jets of their weapons made little arcs of light as they crashed to the floor. Then Colonel Culver took charge of the retreat.

Ahead of them and behind them was impenetrable darkness; only the nearby walls were illumined by the torch that Loah had been forced to turn on. And out of that darkness at any moment might come devastating flames. Culver detailed two men as a rear guard and two others to run ahead a few paces in advance. At intervals of a minute or two their rifles would crack, and the echoes would be pierced by the whining scream of richochets, as their bullets glanced from the walls.

"We may not need them up ahead," Culver shouted to Rawson. "I don't understand it. The place seems deserted—there were plenty of them here before!"

"They've got something else to think of," Rawson shouted in reply. "I killed Phee-e-al—he was their leader. But they're after us now. They'll be running through other passages, cutting in ahead of us."

The tunnel turned and bent upward. For a full half mile they ran straight in a stiff climb. Between gasping breaths Colonel Culver shouted hoarsely: "Won't it ever turn? If they bring up their damned heat-ray machines they'll get us on a straightaway like this!"

Then Smithy's voice outshouted his with a note of hope: "We're almost there; I remember this place. There's where we mounted the searchlight. They've ripped everything out. Up ahead, one turn to the right, then a quarter mile, then a turn toward the crater. That runs straight for a mile, but there's a field gun at the bottom of the volcano. We'll be safe when we're on that last stretch."

AHEAD of them the rifles of the two who ran in advance crashed out in a fury of fire as a green glow appeared. By this time the flame did not die; and Rawson, staring with hot, wide-opened eyes, saw that the ribbon of green swept transversely across the tunnel.

He could hardly stand when he came to a stop. Beside him Loah was swaying with weariness. The walls echoed only the hoarse, panting breath of the men. Then they crept slowly forward, where the passage went steadily up. Loah's light was out; she had slipped the cap on the torch at the first sight of that green.

They stopped but ten feet short of the deadly blaze. From a narrow rift in the left wall it streamed outward, the rock at the edges of that crack turning to red at its touch. It beat upon the opposite wall, where already the stone was melting to throw over them a white glare and the glow of heat. And, like a shimmering, silken barrier, whose touch could mean only instant death, it reached across the wide tunnel at the height of a man's waist and moved slowly up and down. The heaviest armor plate ever rolled could have formed no more impenetrable a barrier.

"And we almost made it," said Smithy slowly. "Look, beyond there —another hundred feet. There's the bend in the tunnel, a sharp turn —and we almost got around!"

Rawson reached for Loah's light. In the wall where the flame was striking, only a dozen steps back, he had seen another dark mouth, a ragged crack in the rock. He sprang to the entrance; it might be there was another way around. His first glance told the story, for he saw the walls draw together again not a hundred feet off.

"A blind alley," he groaned.

ONE of the two who had been their advance guard snapped his rifle to his shoulder. He was aiming at the glowing crack where the green light was issuing.

"A ricochet," he growled. "It may go on in and mess 'em up." But there was no whine of a glancing bullet that followed his shot; the softened wall had cushioned the impact.

Another man sprang beside him. He was shouting at the top of his voice while one hand reached into a bag that hung at his waist. "Get back, everyone," he said. "If I miss. . . ." He did not finish the sentence, but pulled the pin from a hand grenade, then took careful aim and threw.

It went high—thrown there purposely; he had not dared aim it into the flame. But it struck the crevice fairly, and they heard it rattle on inside. The next instant brought the crack and roar of its explosion.

Like a winking signal light the green barrier vanished. Where it had been was only blackness and the dying glow of molten rock. Then, a hundred feet beyond, up close to the roof, the bend of the tunnel turned red; it seemed bursting into flame. Far back of them, down the long sloping way where they had come, shrill voices were screaming—and still there was no green flame to account for that tunnel end flaming red.

Rawson stood motionless. Loah, and the others beside him, seemed likewise petrified, until the voice of Culver jarred them into action.

"The ray!" he shouted. "It's the heat ray, damn them! Quick, jump into that cave!"

THEY had all retreated through fear of the grenade; they were opposite the black place into which Rawson had looked. Loah was close beside Dean; he threw her with all his strength into the black mouth of the cave, then he was one of a crowding, stumbling mass of men who followed after, and their going was lighted by a terrible torch of flame.

One man had stood apart from the others, farther across the wide corridor. His khaki-clad body flashed suddenly to incandescence, then fell to the floor. And inside the cave, where the walls came abruptly together to cut off any further retreat, Colonel Culver spoke softly.

"One more gone," he said. "That was Oakley. Well, he never knew what it was that hit him—and it looks as if we'll all get the same."

Through it all, Rawson had clung to his flame-thrower; unconsciously his hand had held fast to the bent handle of the cylindrical weapon. Now he set it down slowly upon the floor, then straightened his aching body laboriously.

Loah's light was still gleaming. He saw her eyes searching for his, half in terror, half in wonderment. Strange men with strange thundering weapons—he knew she was wondering if they still dared hope, wondering if these warriors of Rawson's race might be able to work further magic.

Dean put one arm tenderly about her and drew her close and his other hand came to rest upon Smithy's shoulder.

"It's the end, dear," he told the girl softly. "It's the end of our journey. You've been so dear and so brave. Pretty tough to lose out when we'd almost fought clear." Then, to Smithy: "Loah came back to save me—refused to go when she could have got away and been safe."

ALREADY the air was stifling. The tunnel beyond the mouth of the cave was hot, though only at its end, where the invisible ray struck the rock surface squarely, was there red, glowing heat. Rawson suddenly saw none of it. He was seeing in his mind the world up above, his own world of great, free, sunlit spaces. Suddenly he was hungry for some closer link, no matter how slight, to bind him to that world.

"What day is it?" he asked. "Have you kept track of time?"

Smithy looked at him wonderingly. "Yes," he said, then added: "Oh, I see. You want to know what day this is when we die. It's the twentieth, Dean"—he looked at the watch on his wrist—"just two o'clock, the afternoon of the twentieth."

Within him, Rawson felt a dull resentment. He was being denied even this last trifling solace. "You're wrong," he said sharply. "You slipped up on your count."

"It doesn't make any real difference," Smithy said. But Rawson went on:

"We left the inner world on the nineteenth. At noon of the twentieth Gor was to cut loose the flame-throwers, melt a hole in the floor of the ocean. But it didn't work. I had hoped I could wipe out the mole-men, turn a solid stream of water down a shaft for over six hundred miles. It would have gone through the Zone of Fire, come flooding up into the mole-men world and spread out all over down deep where it's hot. It would have hit the Lake of Fire—all that!"

"I don't know what you are talking about, Dean." Smithy's voice was intentionally soothing; he knew Rawson was talking wildly. "But I know I am right on the time. We've kept track of it every hour since—"

Rawson's talk had sounded like insanity in Smithy's ears. He would have gone on—he didn't want to see Dean Rawson go out like that—but now he stopped. The rock was quivering beneath his feet.

And now Rawson, with a wild wordless cry, threw himself toward the flame-thrower on the floor. His voice rose to what was almost a scream. "It's worked!" he shouted in a delirium of joy. "It's the end of the brutes!"

THEN, in words which the others could not comprehend but which somehow fired them with his own emotion: "Gor has cut it loose! Water, millions of tons of it! The Zone of Fire—steam! . . ." He threw himself flat on the floor as close to the hot mouth of the cave as he dared go, and the green flame of his weapon ripped outward and up as he aimed it.

From the passage, where it sloped downward toward the source of the heat ray, the sound of shrill, whistling voices had swelled louder. The whole tunnel now glowed green from the flames of an advancing horde. They were bringing their ray projector with them, Rawson knew, not that its beam was visible, but the white, dazzling glow from the end wall where the tunnel turned was still there.

"Shoot above me!" Rawson shouted. "Don't stick your guns out into that ray, but aim as straight down the tunnel as you can. Keep 'em busy. Keep 'em from coming too close."

Above his head he heard the beginning of rifle fire as the men crowded close to aim at the opposite wall at as flat an angle as they could. The air grew shrill with the sound of ricochets as the bullets glanced, but still the enemy came on, as their screeching voices told.

His own weapon was aimed up above. The roof of the tunnel was rough and broken. He directed the flame against the top of a great black granite block. In one place it was fractured. If he could cut it off above, make it fall to the steeply slanting floor. . . . He worked the full force of the blast methodically along the line he had chosen.

THE air of the tunnel had been blowing gently, but now it came in sharp gusts that whipped in through the mouth of the cave, while it brought an unending growl and roar like distant gunfire from deep within the earth. The breeze had swelled to a steady blast when the rock crashed down.

"But that's no use," Culver had shouted, when the deafening sound of its fall had ceased. "They'll melt it in a second with their ray." Even as he spoke the great mass of granite softened and rolled downward as the enemy shot their ray on its lower side. The heat of it struck blastingly into the entrance to their retreat, yet still Rawson kept on, sawing doggedly with the weapon of flame at other great blocks above.

Now that distant thunder grew hugely in volume, and again the rocks trembled beneath them. The wind in the tunnel grew suddenly to a wild blast. It brought to them from a thousand other passages, the shrill, demoniac shrieking of air that was torn and ripped on projecting ledges of rock. Mingled with it was the sound of voices that screamed in terror, and the echo of feet running in mad flight down the tunnel.

The mass of stone, that had been melting under the invisible ray, cooled to red, then to black. Outside, the tunnel, now a place of roaring winds, was lighted only by the single flame of Dean's weapon.

"They've gone!" Culver shouted. "The ray's off. Get outside! Now we'll run for it!" And, with the others, Rawson sprang to his feet and leaped out into the tunnel which was no longer a place of death.

HE heard the sound of their hurrying feet and a voice that cried: "Look out for the turn—the rock's hot," but he did not look after them. He was standing squarely, bracing himself in the blast of air, still directing the flame upon a block that hung stubbornly and would not let go.

He knew that Loah alone stood near. He heard other feet; someone was returning. Then Smithy was upon him, almost jarring him from his careful pose. Smithy was shouting.

"Come back, Dean!" he cried. "Are you crazy? Don't you know they'll be after us again?"

Rawson sprang as the big rock let go. It, too, crashed deafeningly upon the floor and rolled sluggishly downward beside the high hummock of glass that the first rock had become. They bulked hugely in the passage. They were eight or ten feet high, reaching across from one wall to the other.

Above them was still a space of four feet; Rawson estimated it carefully while he looked at the ceiling above. Then he shook off Smithy's hand that was dragging at him and returned to the attack; for now, above the top of the barricade he had built, white ribbons of vapor were streaming. He had to shout to his utmost to make Smith hear above the shrill shriek of the blast.

"Steam!" he screamed into Smithy's ear. "Live steam! We could never make it—before we got to the top we'd be cooked to a pulp. I've got to block it, got to seal it off." A whole section of the ceiling tore loose as he spoke, and the wind raised its voice like the scream of a wounded animal—or the cry of an overwhelmed and stricken people—as it tore through the space that remained.

IT whipped the molten drops as they fell and made of them a deadly rain. Rawson, staring through the clouds of hot steam that now wrapped him about, called to Smithy to take Loah to safety, and kept the flame where it should be—until at length the last aperture was closed, the last gap in the wall filled in. And even after that Rawson kept the flame still playing above that wall till he had melted rock and more rock that flowed down to make the barrier a single heavy, solid mass.

Steam was coming now from the narrow cleft where the green light had flashed out to bar their way. But that was simple, and he sealed the gap shut with his flame.

He was gasping. The radiant heat from that molten mass had been torture that his naked body could never have borne but for the desperate necessity that drove him.

Smithy and Loah were again beside him. "Now," he choked, "we can go, but if there are any cross passages I'll have to block them too."

"There aren't," said Smithy, and added: "I thought you were crazy. You've saved us all, Dean; we never could have made it to the top. That steam was getting hot—hot as if it had come right out of hell."

"It did," said Rawson. Then the flame-thrower fell from his nerveless hand. He was swaying; his knees were trembling with weakness when Smithy and Loah, on either side, took his burned arms tenderly and helped him on where the others had gone.

Colonel Culver and a rescue party met them halfway. The Colonel had seen his men safely to the bottom of the volcanic pit. Others had run from their station beside a field gun to meet them; then Culver had called for volunteers and had gone back. And now there were plenty of willing arms to help.

THE big lift, with its platforms of metal plates, awaited them at the tunnel's end. There was room on it now for all who were left; there was no crowding of men's bodies as there had been on the downward passage. Rawson was stretched on the floor-plates, whose touch was cool to his tortured body. Loah was seated that his head might rest in her lap on that absurd little fragment of skirt. She bent above him, whispering brokenly: "Dean-San—my dear—my own Dean-San! We live, Dean-San. I can scarcely believe it, but I know that we live, for I still have you."

But Dean was able to stand when that journey was done. First, though, there were men who placed him carefully on a stretcher and carried him, when he commanded, to the crater's outer rim. On the ashy floor of the crater a big transport was waiting with idling motors, but Dean would not let them put him inside. He wanted to look out across the world, to see it in reality as he had seen it in his own mind when all hope was gone. He wanted to look out once more across Tonah Basin and let his eyes rest upon country he had known.

Loah and Smithy walked beside him, as the first-aid men carried him toward that distant rim. The rocks there were cleft—it was the place where he first had seen the inside of the crater's cup. There he had them put him down; and, with the help of Loah and Smithy, he got slowly to his feet. While they lifted him, he wondered at the sound in this desert world where no sound should be. A terrific rushing, an endless roar—and then his eyes found the clouds of steam.

BELOW him was the Basin, the tangled wreckage of his camp. And there, where the derrick had stood, was a tall plume of white. It did not begin close to the ground—superheated steam, until it cools and condenses to water vapor, is invisible—but a hundred feet above the sand. And, from there on up, two thousand feet sheer into the air, was a straight shaft of vapor, rolling up for another thousand feet into billowing clouds that the afternoon sun turned to glorious white.

"Power!" gasped Rawson. "Power—and it will be like that indefinitely!" Then he laughed weakly. "I had to go down there to do it, to make Erickson richer, but it was worth it. In there the ocean will slowly subside. Gor and his people will find their lost lands; the column of water in the shaft will hold the back-pressure of steam. And here, I have Loah, and that's all—but that's enough!"

He put one arm, stiff with the bandages of the first-aid men, about the girl. "I hope you'll be happy, dear," he said softly, and turned back. But Smithy barred the way.

"That isn't all," said Smithy jubilantly. "You see, Dean, Erickson fired you—Erickson thought you had run out on him. Instead of backing you up, he quit. So I bought them all out. Whatever is there, Dean—and it's worth more millions than I dare to think about—you own half of! Now get back on that stretcher. Just because you've saved all our necks up here on top of the earth, you mustn't think you can keep an Army ship waiting all day!"

(The End.)

Have You Tried

STRANGE TALES?

Rockets for Propulsion

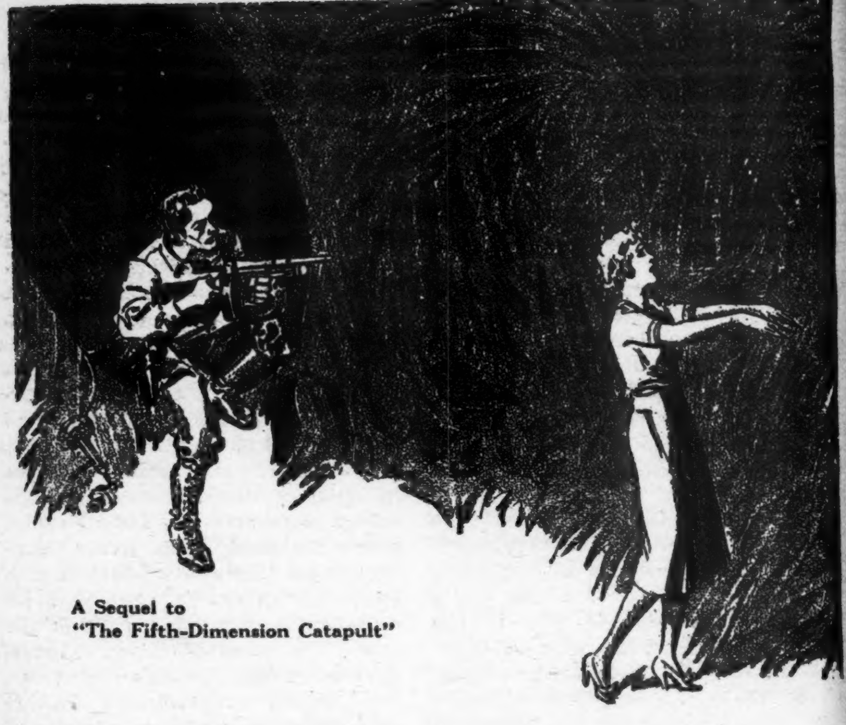
PEEPING out through a narrow slit in a stone fortification, Prof. Albert H. Goddard of Clark University recently saw his latest creation in rockets shoot out from the end of a forty-foot steel tower and careen its noisy way to a point a quarter of a mile distant. This was the largest rocket which Prof. Goddard has constructed in his seventeen years of work in this line. So great was the detonation that many alarmed citizens sent in emergency calls for ambulances, and an airplane left to search for what was thought to be the crack-up of a large plane.

Since Prof. Goddard is known to have been designing rockets with the ultimate purpose of exploring the outer atmosphere of the earth and even a possible trip to the moon, this short quarter-mile flight of his nine-foot rocket was considered to be a great disappointment by some. It was not this, however, nor was it the climax of his work. It was simply a step in the series of experiments which have already extended over many years. In this case, according to reports, he was simply interested in trying out a new liquid fuel, and it would appear that it did exactly what he intended and hoped it would do.

There is no doubt but that rocket experiments must be taken seriously. A rocket thrusts its way forward due to the reaction caused by the expanding gases as they leave the exhaust in the rear. This principle of propulsion is sound and likewise practical because no heavy engine parts are required, the explosion unit being complete in itself. Furthermore, propeller-driven vehicles are dependent upon a more or less dense atmosphere into which the propeller may "bite"; also, oxygen is necessary for the types of internal combustion engine which are now used for aerial transportation. Atmosphere, on the other hand, serves only to hinder the progress of a rocket.

The rocket method of propulsion is as old as our records. Hero of Alexandria is said to have invented an engine which utilized this principle. A hollow metal sphere was mounted upon an axis in such a manner that it was free to turn. Water placed in the sphere was caused to boil by a burner underneath, and the steam thus generated was allowed to escape through two jets which radiated from the sphere in opposite directions causing the sphere to revolve. Sir Isaac Newton once designed, but never constructed, a locomotive which was to have been driven forward by a jet of steam issuing from a jet in the rear. The same ideas were incorporated in Max Valier's rocket car, the Opel, of recent success. In this case, however, explosives were used instead of steam. A speed of sixty-two miles per hour was attained.

Valier, spurred by his success with the new type of car, is now planning a rocket-driven air vehicle with which it is hoped he may be able to cross the English Channel at its narrowest point. This machine will be of a design somewhat similar to an airplane, but it will have comparatively less wing span. The wings could be eliminated entirely were it not necessary to retain some method for making a safe glide to earth. As planned, sufficient rocket power to drive the machine only halfway to its destination will be carried, the remainder of the trip being accomplished through the momentum acquired while rocket power was used. The top speed is expected to be 200 yards per second, and such a velocity would enable the Channel to be crossed in three or four minutes.



A Sequel to
"The Fifth-Dimension Catapult"

The Fifth-Dimension Tube

A Complete Novelette

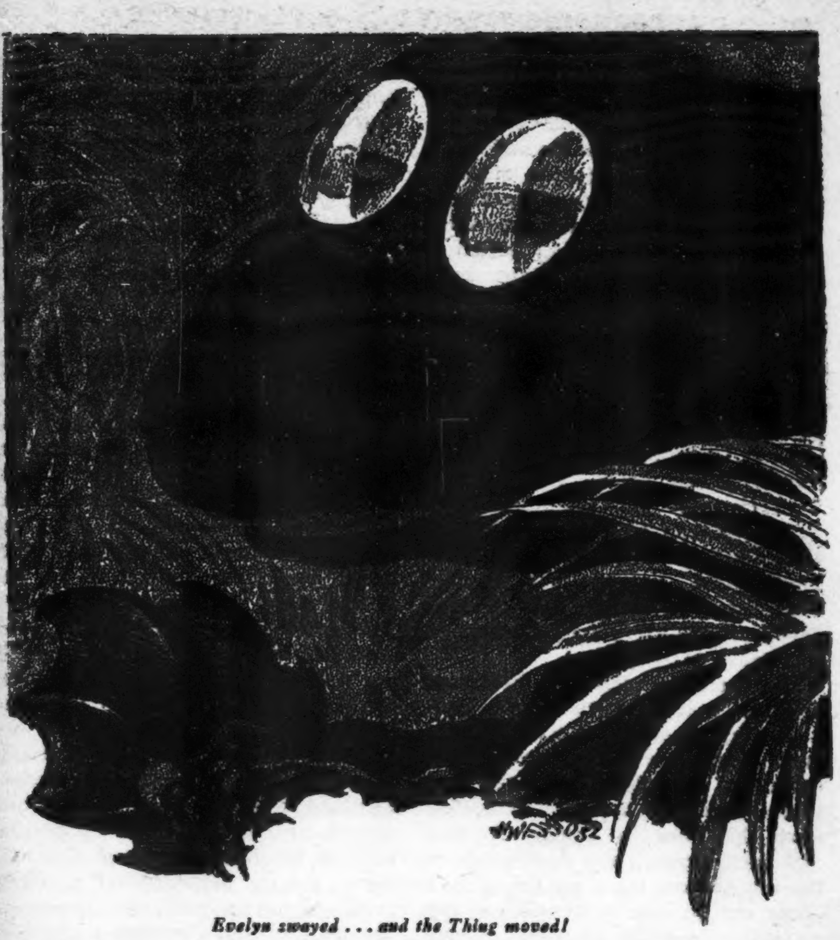
By Murray Leinster

CHAPTER I

The Tube

THE generator rumbled and roared, building up to its maximum speed. The whole laboratory quivered from its vibration. The dynamo hummed and whined and the night silence outside seemed to make the noises within more deafening. Tommy Reames ran his eyes again over the power-leads to the monstrous, misshapen coils. Professor Denham bent over one of them, straightened, and nodded. Tommy Reames nodded to Evelyn, and she threw the heavy multiple-pole switch.

There was a flash of jumping current. The masses of metal on the floor seemed to leap into ungainly life. The whine of the dynamo rose to a scream and its brushes streaked blue flame. The metal things on the floor flicked together and were a tube, three feet and more in diameter. That tube writhed and twisted. It began to form itself into an awkward and seemingly impossible shape, while metal surfaces sliding on each other produced screams that cut through the din of the motor and dynamo. The writhing tube strained and



Evelyn swayed . . . and the Thing moved!

wriggled. Then there was a queer, inaudible *snap* and something gave. A part of the tube quivered into nothingness. Another part hurt the eyes that looked upon it.

And then there was the smell of burned insulation and a wire was arcing somewhere while thick rubbery smoke arose. A fuse blew out with a thunderous report, and Tommy Reames leaped to the suddenly racing motor-generator. The motor died amid gasps and rumblings. And Tommy Reames looked anxiously at the Fifth-Dimension Tube.

By way of Professor Denham's Tube, Tommy and Evelyn invade the inimical Fifth-Dimensional world of golden cities and tree-fern jungles and Ragged Men.

It was important, that Tube. Through it, Tommy Reames and Professor Denham had reason to believe they could travel to another universe, of which other men had only dreamed. And it was important in other ways, too. At the moment Evelyn Denham threw the switch, last-edition newspapers in Chicago were showing headlines about "King" Jacaro's forfeiture of two hundred thousand dollars' bail by failing to appear in court. King Jacaro was a lord of racketeerdom.

While Tommy inspected the Tube anxiously, a certain chief of police in a small town upstate was telling feverishly over the telephone of a posse having killed a monster lizard by torchlight, having discovered it in the act of devouring a cow. The lizard was eight feet high, walked on its hind legs, and had a collar of solid gold about its neck. And jewel importers, in New York, were in anxious conference about a flood of untraced jewels upon the market. Their origin was unknown. The Fifth-Dimension Tube ultimately affected all of those affairs, and the Death Mist as well. And—though it was not considered dangerous then—everybody remembers the Death Mist now.

But at the moment, Professor Denham stared at the Tube concernedly, his daughter Evelyn shivered from pure excitement as she looked at it, and a red-headed man named Smithers looked impassively from the Tube to Tommy Reames and back again. He'd done most of the mechanical work on the Tube's parts, and he was as anxious as the rest. But nobody thought of the world outside the laboratory.

Professor Denham moved suddenly. He was nearest to the open end of the Tube. He sniffed curiously and seemed to listen. Within seconds the others became aware of a new smell in the laboratory. It seemed to come from the Tube itself, and it was a warm, damp smell that could only be imagined as coming from a jungle in the tropics. There were the rich odors of feverishly growing things; the heavy fragrance of unknown tropic blossoms, and a background of some curious blend of scents and smells which was alien and luring and exotic. The whole was like the smell of another planet, of the jungles of a strange world which men had never trod. And then, definitely coming out of the Tube, there was a hollow, booming noise.

IT had been echoed and re-echoed amid the twistings of the Tube, but only an animal could have made it. It grew louder, a monstrous roar. Then yells sounded suddenly above it—human yells, wild yells, insane, half-gibbering yells of hysterical excitement and blood lust. The beast-thing bellowed and an ululating chorus of joyous screams arose. The laboratory reverberated with the thunderous noise. Then there was the sound of crashing and of paddings, and abruptly the noise was diminishing as if its source were moving farther away. The beast-thing roared and bellowed as if in agony, and the yelling noise seemed to show that men were following close upon its flanks.

Those in the laboratory seemed to awaken as if from a bad dream. Denham was kneeling before the mouth of the Tube, an automatic rifle in his hands. Tommy Reames stood grimly before Evelyn. He'd snatched up a pair of automatic pistols. Smithers clutched a spanner and watched the mouth of the Tube with a strained attention. Evelyn stood shivering behind Tommy.

Tommy said with a hint of grim humor:

"I don't think there's any doubt about the Tube having gotten through. That's the Fifth-Dimension planet, all right."

He smiled at Evelyn. She was deathly pale.

"I — remember — hearing noises like that. . . ."

Denham stood up. He painstakingly slipped on the safety of his rifle and laid it on a bench with the other guns. There was a small arsenal on a bench at one side of the laboratory. The array looked much more like arms for an expedition into dangerous territory than a normal part of apparatus for an experiment in rather abstruse mathematical physics. There were even gas masks on the bench, and some of those converted brass Very pistols now used only for discharging tear-and sternutatory gas bombs.

"The Tube wasn't seen, anyhow," said Professor Denham briskly. "Who's going through first?"

Tommy slung a cartridge belt about his waist and a gas mask about his neck.

"I am," he said shortly. "We'll want to camouflage the mouth of the Tube. I'll watch a bit before I get out."

He crawled into the mouth of the twisted pipe.

THE Tube was nearly three feet across, each section was five feet long, and there were gigantic solenoids at each end of each section.

It was not an experiment made at random, nor was the world to which it reached an unknown one to Tommy or to Denham. Months before, Denham had built an instrument which would bend a ray of light into the Fifth Dimension, and had found that he could fix a telescope to the device and look into a new and wholly strange cosmos.* He had seen tree-fern jungles and a monstrous red sun, and all the flora and fauna of a planet in the carboniferous period of development. More, by the accident of its placing he had seen the towers and the pinnacles of a city whose walls and towers seemed plated with gold.

Having gone so far, he had devised a catapult which literally flung objects to the surface of that incredible world. Insects, birds, and at last a cat had made the journey unharmed, and he had built a steel globe in which to attempt the journey in person. His daughter Evelyn had demanded to accompany him, and he believed it safe. The trip had been made in security, but return was another matter. A laboratory assistant, Von Holtz, had sent them into the Fifth Dimension, only to betray them. One King Jacaro, lord of Chicago racketeers, was convinced by him of the existence of the golden city of that other world, and that it was full of delectable loot. He offered a bribe past envy for the secret of Denham's apparatus. And Von Holtz had removed the apparatus for Denham's return before working the catapult to send him on his strange journey. He wanted to be free to sell full privileges of rapine and murder to Jacaro.

The result was unexpected. Von Holtz could not unravel the secret of the catapult he himself had operated. He could not sell the secret for which he had committed a crime. In desperation he called in Tommy Reames—rather more than an amateur in mathematical physics—showed him Evelyn and her father marooned in a tree-fern jungle, and hypocritically asked for aid.

Tommy's enthusiastic efforts soon became more than merely enthusiastic. The men of the Golden City remained invisible, but there were strange, half-mad outlaws of the jungles who hated the city. Tommy Reames had watched helplessly as they hunted for the occupants of the steel globe. He had worked frenziedly to achieve a rescue. In the course of his labor he discovered the treachery of Von Holtz as well as the secret of the catapult, and with the aid of Smithers—who had helped to build the original catapult—he made a new small device to achieve the original end.

---

*"The Fifth-Dimension Catapult"—see the January, 1931, issue of Astounding Stories.

THE whole affair came to an end on one mad afternoon when the Ragged Men captured first an inhabitant of the Golden City, and then Denham and Evelyn in a forlorn attempt at rescue. Tommy Reames went mad. He used a tiny sub-machine gun upon the Ragged Men through the model magnetic catapult he had made, and contrived communication with Denham afterward. Instructed by Denham, he brought about the return of father and daughter to Earth just before Ragged Men and Earthlings alike would have perished in a vengeful gas cloud from the Golden City. Even then, though, his triumph was incomplete because Von Holtz had gotten word to Jacaro, and nattily-dressed gunmen raided the laboratory and made off with the model catapult, leaving three bullets in Tommy and one in Smithers as souvenirs.

Now, using the principle developed in the catapult, Tommy and Denham had built a large Tube, and as Tommy climbed along its corrugated interior he knew a good part of what he should expect at the other end. A steady current of air blew past him. It was laden with a myriad unfamiliar scents. The Tube was a tunnel from one set of dimensions to another, a permanent way from Earth to a strange, carboniferous-period planet on which a monstrous dull-red sun shone hotly. Tommy should come out into a tree-fern forest whose lush vegetation would hide the sky, and which furnished a lurking place not only for strange reptilian monsters akin to those of the long-dead past of Earth, but for the bands of ragged, half-mad human beings who were outlaws from the civilization of which Denham and Evelyn had seen proofs.

TOMMY reached the third bend in the Tube. By now he had lost all sense of orientation. An object may be bent through one right angle only in two dimensions, and a second perfect right angle—at ninety degrees to all former paths—only in three dimensions. It follows that a third perfect right angle requires four dimensions for existence, and four perfect right angles five. The Tube bent itself through four perfect right angles, and since no human being can ever have experience of more than three dimensions, plus time, it followed that Tommy was experiencing other dimensions than those of Earth as soon as he passed the third bend. In short, he was in another cosmos.

There was a moment of awful sickness as he passed the third bend. He was hideously dizzy when he passed the fourth. For a time he felt as if he had no weight at all. But then, quite abruptly, he was climbing vertically upward and the soughing of tree-fern fronds was loud in his ears, and suddenly the end of the Tube was under his fingers and he stared out into the world of the Fifth Dimension.

Now a gentle wind blew in his face. Tree-ferns rose to incredible heights above his head, and now and again by the movements of their fronds he caught stray glimpses of unfamiliar stars. There were red stars, and blue ones, and once he caught sight of a clearly distinguishable double star, of which each component was visible to the naked eye. And very, very far away he heard the beastly yellings he knew must be the outlaws, the Ragged Men, feasting horribly on half-scorched flesh torn from the quivering, yet-living flanks of a monstrous reptile.

Something moved, whimpered—and fled suddenly. It sounded like a human being. And Tommy Reames was struck with the utterly impossible conviction that he had heard just that sound before. It was not dangerous, in any case, and he watched, and listened, and presently he slipped from the mouth of the Tube and by the glow of a flashlight stripped foliage from nearby growths and piled it about the Tube's mouth. And then, because the purpose of the Tube was not adventure but science, he went back down into the laboratory.

THE three men, with Evelyn, worked until dawn at the rest of their preparations for the use of the Tube. All that time the laboratory was filled with the heavy fragrance of a tree-fern jungle upon an unknown planet. The heavy, sickly-sweet scents of closed jungle blossoms filled their nostrils. The reek of feverishly growing green things saturated the air. A steady wind blew down the Tube, and it bore innumerable unfamiliar odors into the laboratory. Once a gigantic moth bumped and blundered into the Tube, and finally crawled heavily out into the light. It was scaled, and terrible because of its monstrous size, but it had broken a wing and could not fly. So it crawled with feverish haste toward a brilliant electric light. Its eyes were especially horrible because they were not compound like the moths of Earth. They were single, like those of a man, and were fixed in an expression of utter, fascinated hypnosis. The thing looked horribly human with those eyes staring from an insect's head, and Smithers killed it in a flash of nerve-racked horror. None of them were able to go on with their work until the thing and its fascinated, staring eyes had been put out of sight. Then they labored on with the smell of the jungles of that unnamed planet thick about them, and noises now and then coming down the Tube. There were roars, and growlings, and once there was a thin high sound which seemed like the far-distant, death-startled scream of a man.

CHAPTER II

The Death Mist

TOMMY REAMES saw the red sun rise while he was on guard at the mouth of the Tube. The tree-ferns above him came into view as vague gray outlines. The many-colored stars grew pale. And presently a bit of crimson light peeped through the jungle somewhere. It moved along the horizon and very slowly grew higher. For a moment, Tommy saw the huge, dull-red ball that was the sun of this alien planet. Queer mosses took form and color in the daylight, displaying colors never seen on Earth. He saw flying things dart among the tree-fern fronds, and some were scaled and some were not, but none of them were feathered.

Then a tiny buzzing noise. The telephone that now rested below the lip of the Tube was being used from the laboratory.

"Smithers will relieve you," said Denham's voice in the receiver. "Come on down. We're not the only people experimenting with the Fifth Dimension. Jacaro's been working, and all hell's loose!"

Tommy slid down the Tube in an instant. The four right-angled turns made him sick and dizzy again, but he came out with his jaw set grimly. There was good reason for Tommy's interest in Jacaro. Besides three bullet wounds, Tommy owed Jacaro something for stealing the first model Tube.

He emerged in the laboratory on his hands and knees as the size of the Tube made necessary. Smithers smiled placidly at him and crawled in to take his place.

"What the devil's happened?" demanded Tommy.

Denham was bitter. He held a newspaper before him. Evelyn had brought coffee and the morning paper to the laboratory. She seemed rather pale.

"Jacaro's gotten through too!" snapped Denham. "He's gotten in a pack of trouble. And he's loosed the devil on Earth. Here—look!" He jabbed his finger at one headline. "And here—and here!" He thrust at others. "Here's proof."

The first headline read: "KING JACARO FORFEITS BOND." Smaller headings beneath it read: "Racketeer Missing for Income Tax Trial. $200,000 Bail Forfeited." The second headline was in smaller type: "Monster Lizard Killed! "Giant Meat Eater Brought Down by Riflemen. Akin to Ancient Dinosaurs, Say Scientists."

"JACARO'S missing," said Denham harshly. "This article says he's vanished, and with him a dozen of his most prominent gunmen. You know he had a model catapult to duplicate—the one he got from you. Von Holtz could arrange the construction of a big Tube for him. And he knew about the Golden City. Look!"

His finger, trembling, tapped on the flashlight picture of the giant lizard of which the story told. And it was a giant. A rope had upheld a colossal, leering, reptilian head while men with rifles posed self-consciously beside the dead creature. It was as big as a horse, and at first glance its kinship to the extinct dinosaurs of Earth was plain. Huge teeth in sharklike rows. A long, trailing tail. But there was a collar about the beast-thing's neck.

"It had killed and was devouring a cow when they shot it," said Denham bitterly. "There've been reports of these creatures for days—so the news story says. They weren't printed because nobody believed them. But there are a couple of people missing. A searching party was hunting for them. They found this!"

Tommy Reames stared at the picture. His face went grimmer still. He thought of sounds he had heard beyond the Tube, not long since.

"There's no question where they came from. The Fifth Dimension. But if Jacaro brought them back, he's a fool."

"Jacaro's missing," said Denham savagely. "Don't you understand? He could get through to the Golden City. These beast-things are proof somebody did. And these things came down the Tube that somebody traveled through. Jacaro wouldn't send them, but somebody did. They've got collars around their necks! Who sent them? And why?"

TOMMY'S eyes narrowed.

"If civilized man found the mouth of a Tube, it would seem like the mouth of an artificial tunnel or a cave—"

"And if annoying vermin, like Jacaro's gunmen"—Denham's voice was brittle—"had come out of it, why, intelligent men might send something living and deadly down it, as men on Earth will send ferrets down a rat-hole! To wipe out the breed! That's what's happened! Jacaro's gone through and attacked the Golden City. They've found his Tube. And they've sent these things down. . . ."

"If *we* found rats coming from a rat-hole," said Tommy very quietly, "and ferrets went down and didn't come up, we'd gas them."

"And so," Denham told him, "so would the Golden City."

He pointed to a boxed double-paragraph news story under a leaded twenty-point headline: "Poisonous Fog Kills Wild Life."

The story was not alarming. It

said merely that state game wardens had found numerous dead game animals in a thinly-settled district near Coltsville, N. Y., and on investigation had found a bank of mist, all of half a mile across, which seemed to have caused the trouble. State chemists and biologists were investigating the phenomenon. Curiously, the bank of mist seemed not to dissipate in a normal fashion. Samples of the fog were being analyzed. It was probably akin to the Belgian fogs which on several occasions had caused much loss of life. The mist was especially interesting because in sunlight it displayed prismatic colorings. State troopers were warning the inhabitants of the neighborhood.

"The gassing's started," said Denham savagely. "I know a gas that shows rainbow colors. The Golden City uses it. So we've got to find Jacaro's Tube and seal it, or only God knows what will come out of it next. I'm going off, Tommy. You and Smithers guard our Tube. Blow it up, if necessary. It's dangerous. I'll get some authority in Albany, and we'll find Jacaro's Tube and blast it shut."

Tommy nodded, his eyes keen and thoughtful. Denham hurried out.

MINUTES later, only, they heard the roar of a car motor going down the long lane away from the laboratory. Evelyn tried to smile at Tommy.

"It seems terrible, dangerous."

Tommy considered and shrugged.

"This news is old," he observed. "This paper was printed last night. I think I'll make a couple of long-distance calls. If the Golden City's had trouble with Jacaro, it's going to make things bad for us."

He swept his eyes about and frowningly loaded a light rifle. He put it convenient to Evelyn's hand and made for the dwelling-house and the telephone. It was odd that as he emerged into the open air, the familiar smells of Earth struck his nostrils as strange and unaccustomed. The laboratory was redolent of the tree-fern forest into which the Tube extended. And Smithers was watching amid those dank, incredible carboniferous-period growths now.

Tommy put through calls, seeing all his and Denham's plans for a peaceful exploration party and amicable contact with the civilization of that other planet, utterly shattered by presumed outrages by Jacaro. He made call after call, and his demands for information grew more urgent as he got closer to the source of trouble. His cause for worry was verified long before he had finished. Even as he made the first call, New York newspapers had crowded a second-grade murder off their front pages to make room for the white mist upstate.

THE early-morning editions had termed it a "poisonous fog." The breakfast editions spoke of it as a "poison fog." But it grew and moved and by the time Tommy had a clear line to get actual information about it, a tabloid had christened it the "Death Mist" and there were three chartered planes circling about it for the benefit of their newspapers. State troopers were being reinforced. At ten o'clock it was necessary to post extra traffic police to take care of the cars headed upstate to look at the mystery. At eleven it began to move! Sluggishly, to be sure, and rather raggedly, but it undoubtedly moved, and as undoubtedly it moved independently of the wind

It was at twelve-thirty that the first casualty occurred. Before that time, the police had frantically demanded that the flood of sightseers be stopped. The Death Mist covered a square mile or more. It clung to the ground, nowhere more than fifty or sixty feet high, and glittered with all the colors of the rainbow. It moved with a velocity of anywhere from ten to twenty miles an hour. In its path were a myriad small tragedies—nesting birds stiff and still, and rabbits and other small furry bodies contorted in queer agonized postures. But until twelve-thirty no human beings were known to be its victims.

Then, though, it was moving blindly across the wind with a thin trailing edge behind it and a rolling billow of descending mist as its forefront. It rolled up to and across a concrete highway, watched by perspiring motor cops who had performed miracles in clearing a path for it among the horde of sightseeing cars. It swept on into a spindling pine wood. Behind it lay a thinning sheet of vapor—thick white mist which seemed to rise and move more swiftly to overtake the main body. It lay across the highway in a sheet which was ten feet deep, then thinned to six, to three. . . .

THE mist was no more than a foot thick when a party of motorists essayed to drive through it as through a sheet of water. They dodged a swearing motorcycle cop and, yelling hilariously, plunged forward. It happened that they had not more than a hundred yards to go, so the whole thing was plainly seen.

The car was ten yards across the sheet of mist before the effect of its motion was apparent. Then the mist, torn by the car-eddy, swirled madly in their wake. The motorists yelled delightedly. There is a picture extant, taken at just this moment. It shows the driver with a foolish grin on his face, clutching the wheel and very obviously stepping on the accelerator. A pandemonium of triumphant, hilarious shouting—and then a very sudden silence.

The car roared on. The road curved slightly. The car did not. It went off the road, turned over, and its engine shrieked itself into silence. The Death Mist went on, draining from the roadway to follow the tall, prismatically-colored cloud. It moved swiftly and blindly. To the circling planes above it, it seemed like a blind thing imagining itself confined, and searching for the edges of its prison. It gave an uncanny impression of being directed by intelligence. But the Death Mist, itself, was not alive.

Neither were the occupants of the motor car.

When Tommy got back to the laboratory after his last call for news, he found Evelyn in the act of starting to fetch him.

"Smithers called," she said uneasily. "He says something's moving about—" The buzzer of the telephone was humming stridently. Tommy answered quickly.

"Just want you handy," said Smithers' calm voice. "I might have to duck. Some Ragged Men are chasin' something. Get set, will ya?"

"Ready for anything," Tommy assured him.

Then he made it true: rifles handy, a sub-machine gun, grenades, gas masks. He handed one to Evelyn. Smithers had one already. Then Tommy waited, grimly ready by the Tube-mouth.

THE warm, scent-laden breeze blew upon him. Straining his ears, he could hear the sound of tree-fern fronds clashing in the wind. He heard the louder sounds made by Smithers, stirring ever so slightly in the Tube. And then he caught a vague, distant uproar. It would have been faint and confused at best, but the Tube was partly blocked by Smithers' body, and there were the multiple bends further to complicate the echoes. It was no more than a formless tumult through which faint yells came occasionally. It drew nearer and nearer. Tommy heard Smithers stir suddenly, almost as if he had jumped. Then there were scrapings which could only mean one thing: Smithers was climbing out of the Tube into the jungle of the Fifth-Dimension world.

The noise rose abruptly to a roar as the muffling effect of Smithers' body was removed. The yells were sharp and savage and half mad. There was a sudden crackling sound and a voice screamed:

"Gott!"

The hair rose at the back of Tommy's neck. Then there came the deafening report of an automatic pistol roaring itself empty above the end of the Tube. Smithers' voice, vastly calm:

"It's a'right, Mr. Reames. Don't worry."

A second pistol took up the fusillade. Yells and howls and screams arose. Men fled. Something came crashing to the mouth of the Tube. Smithers' voice again, with a purring note in it: "Get down there. I'll hold 'em off." Then single, deliberately spaced shots, while something came stumbling, fumbling, squirming down through the Tube, so filling it that Smithers' shooting was muted.

THEN came the subtly different explosions of the Very pistols, discharging gas bombs. And Tommy drew back, his jaw set, and he stood with his weapons very ready indeed, and a scratched, bleeding, exhausted, panting, terror-stricken human being in the tattered costume of Earth crawled from the Tube and groveled on the floor before him.

Evelyn gave a little exclamation, partly of disgust and partly of horror. Because this man, who had had come from the world of the Fifth Dimension, was wholly familiar. He was tall, and he was lean, emaciated now; he wept sobbingly behind thick-lensed spectacles, and his lips were far too full and red. His name was Von Holtz; he had once been laboratory assistant to Professor Denham, and he had betrayed Evelyn and her father to the most ghastly of possible fates for a bribe offered him by Jacaro. Now he groveled. He was horrible to look at. Where he was not scratched and torn his flesh was reddened as if by fire. He was exhausted, and trembling with an awful terror, and he gasped out abject, placatory ejaculations and suddenly collapsed into a sobbing mass on the floor.

Smithers emerged from the Tube with a look of unpleasant satisfaction on his face.

"I chased off the Ragged Men with sneeze gas," he observed with a vast calmness. "They ain't comin' back for a while. An' I always wanted to break this guy's neck. I think I'll do it now."

"Not till I've questioned him," said Tommy savagely. "He and Jacaro have started hell to popping, with that Tube design they stole from me. He's got to stay alive and tell us how to stop it. Von Holtz, talk! And talk quick, or back you go through the Tube for the Ragged Men to work on!"

CHAPTER III

The Tree-Fern Jungle

TOMMY watched Smithers drive away. The sun was sinking low toward the west, and the car stirred up a cloud of light-encarmined dust as it sped down the long, narrow lane to the main road. The laboratory had intentionally been built in an isolated spot, but at the moment Tommy would have given a good deal for a few men nearby. Smithers was taking Von Holtz to Albany to add his information to Denham's pleas. Denham had ordered it, when they reached him by phone after hours of effort. Smithers had to go, to guard against Von Holtz's escape, even sick and ill as he was. And Evelyn had refused to go with him.

"If I stay in the laboratory," she insisted fiercely, "you can slip down and I can blow up the Tube after you, if the Ragged Men don't stay away. But by yourself. . . ."

Tommy did not consent, but he was helpless. There was danger from the Tube. Not only from ghastly animals which might come through, but from men. Smithers had fought the Ragged Men above it. He had chased them off, but they would come back. Perhaps they would come very soon, perhaps not until Denham and Smithers had returned. If they could be held off, the as yet unknown dangers from the other Tube—of which only the lizards and the Death Mist were certainties—might be counteracted. In any case, the Tube must not be destroyed until its defense was hopeless.

Tommy made up a grim bundle to go through the Tube with him: the sub-machine gun, extra drums of shells, more gas bombs and half a dozen grenades. He hung the various objects about himself. Evelyn watched him miserably.

"You—you'll be careful, Tommy?"

"Nothing else but," said Tommy. He grinned reassuringly. "There's nothing to it, really. Just sitting still, listening. If I pop off some fireworks I'll just have to sit down and watch them run."

HE settled his gas mask about his neck and started to enter the Tube. Evelyn touched his arm.

"I'm—frightened, Tommy."

"Shucks!" said Tommy. "Also a couple of tut-tuts." He stood up, put his arms about her, and kissed her until she smiled. "Feel better now?" he asked interestedly.

"Y-yes. . . ."

"Fine!" said Tommy, and grinned again. "When you feel scared again, ring me on the phone and I'll give you another treatment."

But her smile faded as, beaming at her, he crawled into the first section of the Tube. And his own expression grew serious enough when she could see him no longer. The situation was not comfortable. Evelyn intended to marry him and he had to keep her cheerful, but he wished she were well away from here.

He tried to move cautiously through the Tube, but his bundles bumped and rattled. It seemed hours before he was climbing up the last section into the tree-fern jungle. He was caution itself as he peered over the edge. It was already night upon Earth, but here the monstrous, dull-red sun was barely sinking. It moved slowly along the horizon as it dipped, but presently a gray cast came over the colorings in the forest. Flying things came clattering homeward through the masses of fern-fronds overhead. He saw a projectile-like thing with a lizard's head and jaws go darting through an incredibly small opening. It seemed to have no wings at all. But then, in one instant, a vast wing-surface flashed out, made a single gigantic flap—and the thing was a projectile again, darting through a *chevaux-de-frise* of interlaced fronds without a sign of wings to support it.

TOMMY inspected his surroundings with an infinite care. As the darkness deepened he meditatively taped a flashlight below the barrel of the sub-machine gun.

Turned on, it would cast a pitiless light upon his target, and the sights would be silhouetted against the thing to be killed. He hung his grenades in a handy row just inside the mouth of the Tube and set his gas bombs conveniently in place, then settled down to watch.

It was assuredly necessary. Von Holtz's story confirmed his own and Denham's guesses and made their worst fears seem optimistic. Von Holtz had made a Tube for Jacaro, working from the model of Tommy's own construction. It had been completed nearly a month before. But no jungle odors had seeped through that other Tube on its completion. It opened in a subcellar of a structure in the Golden City itself, the city of towers and soaring spires Denham had glimpsed long months before. By sheer fortune it opened upon a rarely-used storeroom where improbable small animals—the equivalent of rats—played obscenely in the light of ever-glowing panels in the wall.

For two days of the Fifth-Dimension world, Jacaro and his gunmen lay quiet. During two nights they made infinitely cautious reconnaissance. The second night it was necessary to kill two men who sighted the tiny exploring party. But the killing was done with silenced automatics, and there was no alarm. The third night they lay still, fearing an ambush. The fourth night Jacaro struck.

HE and his men fled back to their Tube with plunder and precious gems. Their loot was vast even beyond their hopes, though they had killed other men in gathering it. The Golden City was rich beyond belief. The very crust of the Fifth-Dimension world seemed to be composed of other substances than those of Earth. The common metals of Earth were rare or even unknown. The rarer metals of Earth were the commonplace ones in the Golden City. Even the roofs seemed plated with gold, but Jacaro's gunmen saw not one particle of iron save in a ring they took from a dead man's finger. There, an acid-etched plate of steel was set as if to be used for a signet.

Von Holtz had accompanied the raiders perforce on every journey. Jeweled bearings for motors; objects of commonest use, made of gold beat thin for lightness; huge ingots of silver for industry; once a queer-shaped spool of platinum wire that it took two men to carry—these things made up the loot they scurried back to their rathole with. Five raids they made, and twenty men they shot down before they came upon disaster. On the sixth raid an outcry rose and an ambush fell upon them.

Flashes of incredibly vivid actinic flame leaped from queer engines that opened upon them. Curious small truncheonlike weapons spat paralyzing electric shocks upon them. The twelve gangsters fought with the desperation of cornered rats, with notched and explosive bullets and with streams of lead from tommy-guns.

A CHANCE bullet blew something up. One of the flame weapons flew to bits, spouting what seemed to be liquid thermit upon friend and foe alike. The way of the gangsters back to their Tube was barred. The route they knew was a chaos of scorched bodies and melting metal. The thermit flowed in all directions, seeming to grow in volume as it flamed. Jacaro and his gangsters fled. They broke through the shaken remnants of the ambush. The six of them who survived the fighting found a man somnolently driving a ground vehicle with two wheels. They burst upon him and, with their seared faces constituting threats in themselves, forced him to drive them out of the Golden City. They fled along aluminum roads into the tree-fern forests, while the sky behind them seemed to flame as the city woke to the tumult in its ways.

They killed the driver of their vehicle when he refused to take them farther, and it was that murder which saved their lives. It was seen by Ragged Men, the outlaws of the jungle, and it proved their enmity to the Golden City. The Ragged Men greeted them joyously and fed them, and enlisted their aid in a savage attack on a land-convoy on the way to the city. Their weapons carried the convoy, and they watched wounded prisonors killed with excruciating tortures. . . .

They were with the Ragged Men now, Von Holtz believed. He had fled a week or more before, when Jacaro—already learning the language of his half-mad allies—began to plan a grandiose attack upon the Golden City. Von Holtz was born a coward, and he knew where Tommy Reames and Denham would shortly thrust a Tube through. It would come out just where the catapult had flung Evelyn and Denham, months before, the same spot where he had marooned them. He searched desperately for that Tube, and failed to find it. He was chased by carnivores, scratched by thorns, and at last pursued by a yelling horde of human devils who were fired into by Smithers from the mouth of the just-finished Tube.

TOMMY debated the story grimly as he stood guard in the Tube in the humid jungle night. Many-colored stars winked fitfully through the thatch of giant ferns overhead. The wind soughed unsteadily above the jungle. There were queer creakings, and once or twice there were distant cries, and when the wind died down there was a deep-toned croaking audible somewhere which sounded rather like the croaking of unthinkably monstrous frogs. But it could not be that, of course. And once there was the sound of dainty movement and something passed nearby. Tommy Reames saw the shadowy outline of a bulk so vast that it turned him cold to think about it, and it did not seem fair for any creature as huge as that to move so quietly.

Then there was a little scuffling noise beneath him. A hand touched his foot.

"It's—it's me, Tommy." Evelyn crowded up beside him and whispered shakenly: "It—it was so lonesome down there, so quiet."

Tommy frowned unhappily in the darkness. If he sent her back, she would know it was because he knew danger lurked here. Then she would worry. If he did not send her back. . . .

"I'll—I'll go back the minute you tell me," she insisted forlornly. "Honestly. But—I was lonesome."

Tommy slipped his arm about her.

"Woman," he said sternly, "I'm going to let you stay ten minutes, so you can brag to our grandchildren that you were the first Earth-girl ever to be kissed in the Fifth Dimension. But I want you down in the laboratory so you won't be in my way if I start running!"

His tone was the right one. She even laughed a little, softly, as he pressed her to him. Then she clung to his hand and tried eagerly to pierce the darkness all about them.

"You'll be able to see something presently," he assured her in a low tone. "Just keep quiet, now."

SHE gazed up at the stars, then around in the so-nearly complete obscurity. Tommy answered her comments abstractedly, after a little. He was not quite sure that certain irregular sounds, yet far distant, were not actually quite regular ones. The Ragged Men Smithers had shot into had run away. But they would come back, and they might come with Jacaro and his gunmen as allies. If those distant sounds were men. . . .

She withdrew her hand from his. Her back was toward him then, as she tried to pierce the darkness with her eyes. Tommy listened uneasily to the distant sound. Suddenly he felt Evelyn bump against his shoulder. He turned sharply—and she was out of the Tube! She was walking steadily off into the darkness!

"Evelyn! Evelyn!"

She did not falter or turn. He switched on the flashlight beneath his gun barrel and leaped out of the Tube himself. The light swept about. Evelyn's lithe figure kept moving away from him. Then his heart stood still. There were eyes beyond her in the darkness, huge, monstrous, steady eyes, half a yard apart in a head like something out of hell. And he could not fire because Evelyn was between the Thing and himself. Its eyes glowed unholily—fascinating, hypnotic, insane. . . .

EVELYN swayed . . . and the Thing moved! Tommy leaped like a madman, shouting. As his feet struck the ground a mass of solid-seeming fungus gave way beneath him. He fell sprawling, but clutching the gun fast. The spreading beam of the flashlight showed him Evelyn turning, her face filled with a wakening horror—the horror of one released from the fascination of a snake. She screamed his name.

Then a huge lizard paw swept forward and seized her body. A second gripped her as she screamed again. And Tommy Reames was deathly, terribly cool. The whole thing had happened in seconds only. He was submerged in slimy, sticky ooze which was the crushed fungus that had tripped him. But he cleared the gun. The flashlight limned a ghastly, obscenely fat body and a long tapering tail. Tommy aimed at the base of that tail and pulled the trigger, praying frenziedly.

A stream of flame leaped from the gun-muzzle. Explosive bullets uttered their queer cracking noise. The thing screamed horribly. Its cry was hoarsely shrill. The flashlight showed it swinging ponderously about, with Evelyn held fast against its body in a fashion horribly reminiscent of a child holding a doll.

Tommy was scrambling upright. Jaws clamped, cold horror filling him, he aimed again, at the sharp-toothed head above Evelyn's body. He could not try a heart shot with her in the way. Again the gun spat out a burst of explosive lead. And Tommy should have been sickened by the effect of the detonating missiles. The thing's lower jaw was shattered, half severed, made useless. It should have been killed a dozen times over.

But it screamed again until the jungle rang with the uproar, and then it fled, still screaming and still holding Evelyn clutched fast against its scaly breast.

CHAPTER IV

The Fifth-Dimension World

TOMMY flung himself in pursuit, despairing. Evelyn cried out once more as the lumbering thing fled with her, giving utterance to shrieking outcries at which the tree-fern jungle shook. It leaped once, upon monstrous hind legs, but came crashing heavily to the ground. Tommy's explosive bullets had shattered the bones which supported the balancing tail. Now that huge fleshy member dragged uselessly. The thing could not progress in its normal fashion of leaps covering many yards. It began to waddle clumsily, shrieking, with Evelyn clasped close. Its jaw was a shattered horror. It went marching insanely through the blackness of the jungle, and with it went the unholy din of its anguish, and behind it Tommy Reames came flinging himself frenziedly in pursuit.

Normally, the thing should have distanced him in seconds. Even crippled as it was, it moved swiftly. The scaly, duck-shaped head reared a good twenty feet above the fallen tree-fern fronds which carpeted the jungle. The monstrous splayed feet stretched a good yard and a half from front to rear upon the ground. Even its waddling footprints were yards apart, and it moved in terror.

Tommy tripped, fell, and got to his feet again, and the shrieking tumult was farther away. He raced madly toward the sound, the flashlight beam cutting swordlike through the blackness. He caught sight of the warty, scaly bulk of the monster at the extreme limit of the rays. It was moving faster than he could travel. He sobbed helpless curses at the thing and put forth superhuman exertions. He leaped fallen tree-fern trunks, he splashed through shallow ponds—later, when he knew something of the inhabitants of such pools, Tommy would turn cold at that memory—and raced on, gasping for breath while the shrieking of the thing that bore Evelyn grew more and more distant.

IN five minutes he was almost strangling and the thing was half a mile ahead of him. In ten, he was exhausted, and the shrieking noise it made as it waddled away was distinctly fainter. In fifteen minutes he only heard its hooting scream between the harsh laboring rasps of his own breath as he drew it into tortured lungs. But he ran on. He leaped and climbed and ran in a terrible obliviousness to all dangers the jungle might hold.

He leaped down from one toppled tree-trunk upon what seemed to be another. But the thing he landed upon gave beneath his boots in the unmistakable fashion of yielding flesh. Something vast and angry stirred and hissed furiously. Something—a head, perhaps—whipped toward him among the fallen fern-fronds. But he was racing on, sobbing, cursing, praying all at once.

Then suddenly he broke out into a profuse sweat. His breathing became easier, and then he was running lightly. His second wind had come to him. He was no longer exhausted. He felt as if he could run forever, and ran on more swiftly still. Suddenly the flashlight beam showed him a deep furrow in the rotting vegetation underfoot, and something glistened. A musky reek filled his nostrils. The thing's trail—the furrow left by its dragging tail! That musky reek was the thing's blood. It was bleeding from the wounds the explosive bullets had made. It was spouting whatever filthy fluid ran in its veins even as it waddled onward, screaming.

Five minutes more, and he felt that he was gaining on it. Then, and he was sure of it. But it was half an hour before he actually overtook the injured monster marching like a mad machine, its mutilated ducklike head held high, its colossal feet lifting one after the other in a heavy, slowing waddle, and its hoarse screams re-echoing in a senseless uproar of agony.

TOMMY'S hands were shaking, but his brain was cool with a vast coolness. He raced past the shrieking monster, and halted in its path. He saw Evelyn, a huddled bundle, clasped still to the creature's scaly breast. And Tommy sent a burst of explosive bullets into a gigantic, foot-thick ankle-joint.

The monster toppled, and flung out its prehensile lizard claws in an instinctive effort to catch itself. Evelyn was thrown clear. And Tommy, standing alone in the blackness of a carboniferous jungle upon an alien planet, sent bullet after bullet into the shaking, obscenely flabby body of the thing. The bullets penetrated, and exploded. Great masses of flesh upheaved and fell away. Great gouts of awful-smelling fluid were flung out and blown to mist by the explosions. The thing did not so much die as disintegrate under the storm of detonating missiles.

Then Tommy went to Evelyn. He was wild with grief. He had no faintest hope that she could still be living. But as he picked her up she moaned softly, and when he cried her name she clung to him, pressing close in an agony of thankfulness almost as devastating as her fear had been.

It was minutes before either of them could think of anything other than her safety and the fact that they were together aagin. But then Tommy said, in a shaken effort to be himself again:

"I—I'd have done better if—if I'd had roller skates, maybe." His grin was wholly unconvincing. "Why'd you get out of the Tube?"

"Its eyes!" Evelyn shuddered, her own eyes hidden against Tommy's shoulder. "I saw them suddenly, looking at me. And I—hadn't any will. I felt myself getting out of the Tube and walking toward it. It was like the way a snake fascinates—hypnotizes—a bird. . . ."

A vagrant wind-eddy submerged them in the foul reek of the dead thing's flesh. Tommy stirred.

"Ugh! Let's get out of this. There'll be things coming to feed on that carcass. They'll smell it."

Evelyn tried to stand, and succeeded. She clung to his hand.

"Do you think you can find the Tube again?"

Tommy was already thinking of that. He grimaced.

"Probably. Back-trail the damned thing, if the flashlight battery holds out. Its tail left plenty of sign for us to follow."

THEY started. And Evelyn had literally been forgotten in its agony by the monster which had carried her. Its body, though scaled and warty, was flabby and soft. Pressed against its breast she had been half strangled, but had no injuries beyond huge, purple bruises which had not yet reached the point of stiffness. She followed Tommy gamely, and the need for action kept her from yielding to the reaction from her terror.

For a long, long time they back-trailed. Less than fifteen minutes after leaving the carcass of the thing Tommy had killed, they heard beast-roarings and the sound of fighting. But that noise died away as they traveled. Presently they reached the spot where Tommy had leaped upon a huge living thing. It was gone, now, but the impress of a body the thickness of a barrel remained upon the rotted vegetation of the jungle floor. Evelyn shivered when Tommy pointed it out.

"It was large," said Tommy ruefully. "I didn't even get a good look at the thing. Probably just as well, though. I might have been—er—delayed. Good Lord! What's that?"

A light had sprung into being

somewhere. It was bright. It was blinding in its brilliance. Coming through the tangled jungle growth, it seemed as if spears of flame shot through the air, irradiating stray patches of scabrous tree-trunk with unbearable light. For an instant the illumination held. Then there was a distant, cracking detonation. The unmistakable explosion of guncotton split the air, and its echoes rolled and reverberated through the jungle. The light went out. Then came a thin, high yelling sound which, faint as it was, had something of the quality of hysterical glee. That crazy ululation kept up for several minutes. Evelyn shivered.

"The Ragged Men," said Tommy very quietly. "They sneaked up on the Tube. They flung blazing thermit, or something like it, with a weapon captured from the Golden City. That explosion was the grenades going off. I'm afraid the Tube's blown up, Evelyn."

She caught her breath, looking mutely up at him.

"Here's a pistol," he said briefly, "and shells. There's no use our going to the Tube to-night. It would be dangerous. We'll do our investigating at dawn."

HE found a crevice where tree-fern trunks grew close together and closed in three sides of a sort of roofless cave. He seated himself grimly at the opening to wait for daybreak. He was not easy in his mind. There had been two Tubes to the Fifth-Dimension world. One had been made by Jacaro for his gunmen. That was now held by the men of the Golden City, as was proved by carnivorous lizards and the Death Mist that had come down it. The other was now blown up or, worse, in the hands of the Ragged Men. In any case Tommy and Evelyn were isolated upon a strange planet in a strange universe. To fall into the hands of the Ragged Men was to die horribly, and the Golden City would not now welcome inhabitants of the world Jacaro and his men had come from. To the civilized men of this world, Jacaro's raids would seem invasion. They would seem acts of war on the part of the people of Earth. And the people of Earth, all of them, would seem enemies. Jacaro would never be identified as an unauthorized invader. He would seem to be a scout, an advance guard, a spy, for hordes of other invaders yet to come.

As the long night wore away, Tommy's grim hopelessness intensified. The Ragged Men would hunt them for sport and out of hatred for all sane human beings. The men of the Golden City would be merciless to compatriots of Jacaro's gunmen. And Tommy had Evelyn to look out for.

WHEN dawn came, his face was drawn and lined. Evelyn woke with a little gasp, staring affrightedly about her. Then she tried gamely to smile.

"Morning, Tommy," she said shakily. She added in a brave attempt at levity: "Where do we go from here?"

"We look at the Tube," said Tommy heavily. "There's a bare chance. . . ."

He led the way as on the night before, with his gun held ready. They traveled for half an hour through the awakening jungle. Then for long, long minutes Tommy searched for a sign of living men before he ventured forth to look at the wreckage of the Tube. He found no live men, and only two dead ones. But a glimpse of their bestial, vice-ridden faces was enough to remove any regret for their deaths.

The Tube was shattered. Its mouth was belled out and broken by the explosion of the grenades hung within it. A part of the metal was molten—from the thermit, past question. There was a veritable crater fifteen feet across where the Tube had come through, and there were only shattered shreds of metal where the first bend had been. Tommy regarded the wreckage grimly. A pair of oxidized copper wires, their insulation burnt off, stung his eyes as he traced them to where they vanished in torn-up earth. He took them in his bare hands. The tingling sting of a low-voltage current made his heart leap. Then he smiled grimly. He touched them to each other. Dot-dot-dot — dash-dash-dash — dot-dot-dot. S O S ! If there was anybody in the laboratory, that would tell them.

His hands stung sharply. Someone was there, ringing the phone! Evelyn came toward him, her face resolutely cheerful.

"No hope, Tommy?" she asked. "I just saw the telephone, all battered up. I guess we're pretty badly off."

"Get it!" said Tommy feverishly. "For Heaven's sake, get it! The phone wires weren't broken. If we can make it work. . . ."

THE instrument was a wreck. It was crumpled and torn and apparently useless. The diaphragm of the receiver was punctured. The transmitter seemed to have been crushed. But Tommy worked desperately over them, and twisted the earth-wires into place.

"Hello, hello, hello!"

The voice that answered was Smithers', strained and fearful:

"Mr. Reames! Thank Gawd! What's happened? Is Miss Evelyn all right?"

"So far," said Tommy. "Listen!" He told curtly just what had happened. "Now, what's happened on Earth?"

"Hell!" panted Smithers bitterly. "Hell's been poppin'! The Death Mist's two miles across an' still growin' an' movin'. Four townships under martial law an' movin' out the people. It got thirty of 'em this mornin'. An' they think the professor's crazy an' nobody'll listen to him!"

"Damn!" said Tommy. He considered, grimly. "Look here, Von Holtz ought to convince them."

"He caved in, outa his head, before I got to Albany. He's in hospital now, ravin'. He's got some kinda fever the doctors don't know nothin' about. Sick as hell!"

Tommy compressed his lips. Matters were more desperate even than he had believed. He informed his helper measuredly:

"Evelyn and I can't stay around here, Smithers. The Ragged Men may come back, and it'll be weeks before you and the professor can get another Tube through. I'm going to make for the Golden City and work on them there to cut off the Death Mist."

There was an inarticulate sound from Smithers.

"Tell the professor. It he can find Jacaro's Tube, he'll work out some way to communicate through it. We've got to stop that Death Mist somehow. And we don't know what else they may try."

Smithers tried to speak, and could not. He merely made grief-stricken noises. He worshiped Evelyn, and she was isolated in a hostile world which was vastly more unreachable than could be measured by millions or trillions of miles. But at last he said unsteadily:

"We'll be comin', Mr. Reames. We'll come, if we have t' blow half the world apart!"

Tommy said grimly: "Then hunt up the Golden City and bring extra ammunition. Mostly explosive bullets. Good-by."

HE untwisted the wires from the shattered phone units and thrust them in his pocket. Evelyn was picking up stray small objects from the ground.

"I've found some cartridges, Tommy," she said constrainedly, "and a pistol I think will work."

"Then listen for visitors," commanded Tommy, "while I look for more."

For half an hour he scoured the area around the shattered Tube. He found where some clumsy-wheeled thing had been pushed to a spot near the Tube—undoubtedly the machine which had sprayed the flaming stuff upon it. He found two pockets full of shells. He found an extra magazine for the sub-machine gun. It was nearly full and only a little bent. That was all.

"Now," he said briskly, "we'll start. I've got a hunch the jungle thins out over that way. We'll find a clearing, try to locate the Golden City either by seeing it or by watching for aircraft flying to it, and then make for it. They're making war on Earth, there. They don't understand. We've got to make them understand. O. K.?"

Evelyn nodded. She put out her hand suddenly, a brave slender figure amid the incredible growths about her.

"I'm glad, Tommy," she said slowly, that if—if anything happens, it will be the—the two of us. Funny, isn't it?"

Tommy kissed the twisted little smile from her face.

"And now that that's over," he observed, ashamed of his own emotion, "let's go!"

THEY went, Tommy watched the sun and kept approximately a straight line. They traveled three miles, and the jungle broke abruptly. Before them was a spongy surface neither solid earth or marsh. It shelved gently down to a vast and steaming morass upon which the dull-red sun shone hotly. It was vast, that marsh, and a steaming haze hung over it, and it seemed to reach to the world's end. But vaguely, through the attenuating upper layers of the steamy haze, they saw the outlines of a city beyond: tall towers and soaring spires, buildings of a grace and perfection of outline unknown upon the Earth. And faint golden flashes came from the walls and pinnacles of that city. They were reflections of this planet's monster sun, upon walls and roofs of plated gold.

"The Golden City," said Tommy heavily. He looked at the horrible marsh between. His heart sank.

And then there was a sudden screaming ululation nearby. A half-naked man was running out of sight. Two others danced and capered and yelled in insane glee, pointing at Tommy and at Evelyn. The running man's outcry was echoed from far away. Then it was taken up and repeated here and there in the jungle.

"They saw our tracks near the Tube," snapped Tommy bitterly. "Oh, what a fool I am! Now they'll ring us in."

He seized Evelyn's hand and began to run. There was a little rise in the ground a hundred yards away, with a clump of leafy ferns to shade it. They reached it as other half-naked, wholly mad human forms burst out of the jungle to yell and caper and make derisive and horrible gestures at the fugitives.

"Here we fight," said Tommy grimly. "The ground's open, anyhow. We fight here, and very probably we die here. But first. . . ."

He knelt down and drew the finest of fine beads upon a bearded man who carried a glittering truncheonlike club which, by the way it was carried, was more than merely a bludgeon. He pulled the trigger for a single shot.

The bullet struck the capering Ragged Man fairly in the chest. And it exploded.

CHAPTER V

The Fight in the Marsh

TWICE, within the next two hours, the Ragged Men mustered the courage to charge. They came racing across the semi-solid ooze like the madmen they were. Their yells and shouts were maniacal howls of blood-lust or worse. And twice Tommy broke their rush with a savage ruthlessness. The sub-machine gun's first magazine was nearly empty. It was an unhandy weapon for single-shot work, but it was loaded with explosive shells. The second rush he stopped with an automatic pistol. There were half-naked bodies partly buried in the ooze all the way from the jungle's edge to within ten yards of the hillock on which he and Evelyn had taken refuge.

It was hot there, terribly hot. The air was stifling. It fairly reeked of moisture, and the smells from the swamp behind them were sickening. Tommy began to transfer the shells from the spare bent magazine to the one he had carried with the gun.

"We've a couple of reasons to be thankful," he observed. "One is that there's a bit of shade overhead. The other is that we had the big magazines for this gun. We still have nearly ninety shells, besides the ones for the pistols."

Evelyn said soberly:

"We're going to be killed, don't you think, Tommy?"

Tommy frowned.

"I'm rather afraid we are," he said irritably. "Confound it, and I'd thought of such excellent arguments to use in the City back yonder! Smithers said the Death Mist was two miles across, to-day, and still growing. The people in the city are still pouring the stuff down through Jacaro's Tube."

Evelyn smiled faintly. She touched his hand.

"Trying to keep me from worrying? Tommy. . . ." She hesitated until he growled a question. "Please—remember that when Daddy and I were in the jungle before, we saw what these Ragged Men do to prisoners they take. I just want you to promise that—well, you won't wait too long, in hopes of somehow saving me."

Tommy stared at her. Then he decisively reached forward and put his hand over her mouth.

"Keep quiet," he said gently. "They shan't capture you. I promise that. Now keep quiet."

THERE was only silence for a long time. Now and again a hidden figure screamed in rage at them. Now and again some flapping thing sped toward the jungle's edge. Once a naked arm thrust one of the golden truncheons from behind its cover, pointing at a flying thing a few yards overhead. The flying thing suddenly toppled, turning over and over before it crashed to the ground. There were howls of glee.

"They seem mad," said Tommy meditatively. "and they act like lunatics, but I've got a hunch of some sort about them. But what?"

Sunlight gleamed on something golden beyond the jungle's edge. Naked figures went running to the spot. An exultant tumult arose.

"Now they try another trick," Tommy observed dispassionately. "I remember that at the Tube they had pushed something on wheels. . . ."

The sub-machine gun was unhandy for accurate single shots, and no pistol can be used to effect at long ranges. To conserve ammunition, Tommy had been shooting only at relatively close targets, allowing the Ragged Men immunity at over two hundred yards. But now he flung over the continuous-fire stud. He watched grimly.

The foliage at the edge of the jungle parted. A crude wagon appeared. Its axles were lesser tree-trunks. Its wheels were clumsy and crude beyond belief. But mounted upon it there was a queer mass of golden metal which looked strangely beautiful and strangely deadly.

"That's the thing," said Tommy dispassionately, "which made the flare of light last night. It blew up the Tube. And Von Holtz told me—hm—his friends, in the City. . . ."

He sighted carefully. The wagon and its contents were surrounded by a leaping, capering mob. They shook their fists in an insane hatred.

A storm of bullets burst upon them. Tommy was traversing the little gun with the trigger pressed down. His lips were set tightly. And suddenly it seemed as if the solid earth burst asunder! There had been an instant in which the bullet-bursts were visible. They tore and shattered the howling mob of Ragged Men. But then they struck the golden weapon. A sheet of blue-white flame leaped skyward and round about. A blast of blistering, horrible heat smote upon the beleaguered pair. The moisture of the ooze between them and the jungle flashed into steam. A section of the jungle itself, a hundred yards across, shriveled and died.

STEAM shot upward in a monstrous cloud—miles high, it seemed. Then, almost instantly, there was nothing left of the Ragged Men about the golden weapon, or of the weapon itself, but an unbearable blue-white light which poured away and trickled here and there and seemed to grow in volume as it flamed.

From the rest of the jungle a howl arose. It was a howl of such loss, and of such unspeakable rage, that the hair at the back of Tommy's neck lifted, as a dog's hackles lift at sight of an enemy.

"Keep your head down, Evelyn," said Tommy composedly. "I have an idea that that burning stuff gives off a lot of ultra-violet. Von Holtz was badly burned, you remember."

Naked figures flashed forward from the jungle beyond the burned area. Tommy shot them down grimly. He discarded the submachine gun with its explosive shells for the automatics. Some of his targets were only wounded. Those wounded men dragged themselves forward, screaming their rage. Tommy felt sickened, as if he were shooting down madmen. A voice roared a rage-thickened order from the jungle. The assault slackened.

Five minutes later it began again, and this time the attackers waded out into the softer ooze and flung themselves down, and then began a half-swimming, half-crawling progress behind bits of tree-fern stump, or merely pushing walls of the jellylike mud before them. The white light expanded and grew huge—but it dulled as it expanded, and presently seemed no hotter than molten steel, and later still it was no more than a dull-red heat, and later yet. . . .

Tommy shot savagely. Some of the Ragged Men died. More did not.

"I'm afraid," he said coolly, "they're going to get us. It seems rather purposeless, but I'm afraid they're going to win."

Evelyn thrust a shaking hand skyward. "There, Tommy!"

A STRANGE, angular flying thing was moving steadily across the marsh, barely above the steamlike haze that hung in thinning layers about its foulness. The flying thing moved with a machinelike steadiness, and the sun twinkled upon something bright and shining before it.

"A flying machine," said Tommy shortly. His mind leaped ahead and his lips parted in a mirthless smile. "Get your gas mask ready, Evelyn. The explosion of that thermit-thrower made them curious in the City. They sent a ship to see."

The flying thing grew closer, grew distinct. A wail arose from the Ragged Men. Some of them leaped to their feet and fled. A man came out into the open and shook his fists at the angular thing in the air. He screamed at it, and such ghastly hatred was in the sound that Evelyn shuddered.

Tommy could see it plainly, now. Its single wing was thick and queerly unlike the air-foils of Earth. A framework hung below it, but it had no balancing tail. And there was a glittering something before it that obviously was its propelling mechanism, but as obviously was not a screw propeller. It swept overhead, with a man in it looking downward. Tommy watched coolly. It was past him, sweeping toward the jungle. It swung sharply to the right, banking steeply. Smoking things dropped from it, which expanded into columns of swiftly-descending vapor. They reached the jungle and blotted it out. The flying machine swung again and swept back to the left. More smoking things dropped. Ragged Men erupted from the jungle's edge in screaming groups, only to writhe and fall and lie still. But a group of five of them sped toward Tommy, shrieking their rage upon him as the cause of disaster. Tommy held his fire, looking upward. A hundred yards, fifty yards, twenty-five. . . .

THE flying machine soared in easy, effortless circles. The man in it was watching, making no effort to interfere.

Tommy shot down the five men, one after the other, with a curiously detached feeling that their vice-brutalized faces would haunt him forever. Then he stood up.

The flying machine banked, turned, and swept toward him, and a smoking thing dropped toward the earth. It was a gas bomb like those that had wiped out the Ragged Men. It would strike not ten yards away.

"Your mask!" snapped Tommy.

He helped Evelyn adjust it. The billowing white cloud rolled around him. He held his breath, clapped on his mask, exhaled until his lungs ached, and was breathing comfortably. The mask was effective protection. And then he held Evelyn comfortably close.

For what seemed a long, long while they were surrounded by the white mist. The cloud was so dense, indeed, that the light about them faded to a gray twilight. But gradually, bit by bit, the mist grew thinner. Then it moved aside. It drifted before the wind toward the tree-fern forest and was lost to sight.

The flying machine was circling and soaring silently overhead. As the mist drew aside, the pilot dived down and down. And Tommy emptied his automatic at the glittering thing which drew it. There was a crashing bolt of blue light. The machine canted, spun about with one wing almost vertical, that wing-tip struck the marsh, and it settled with a monstrous splashing of mud. All was still.

Tommy reloaded, watching it keenly.

"The framework isn't smashed up, anyhow," he observed grimly.

"The pilot thinks we're some of Jacaro's gang. My guns were proof, to him. So, since the Ragged Men didn't get us, he gassed us." He watched again, his eyes narrow. The pilot was utterly still. "He may be knocked out. I hope so! I'm going to see."

AUTOMATIC held ready, Tommy moved toward the crashed machine. It had splashed into the ooze less than a hundred yards away. Tommy moved cautiously. Twenty yards away, the pilot moved feebly. He had knocked his head against some part of his machine. A moment later he opened his eyes and stared about. The next instant he had seen Tommy and moved convulsively. A glittering thing appeared in his hand—and Tommy fired. The glittering thing flew to one side and the pilot clapped his hand to a punctured forearm. He went white, but his jaw set. He stared at Tommy, waiting for death.

"For the love of Pete," said Tommy irritably, "I'm not going to kill you! You tried to kill me, and it was very annoying, but I have some things I want to tell you."

He stopped and felt foolish because his words were, of course, unintelligible. The pilot was staring amazedly at him. Tommy's tone had been irritated, certainly, but there was neither hatred nor triumph in it. He waved his hand.

"Come on and I'll bandage you up and see if we can make you understand a few things."

Evelyn came running through the muck.

"He didn't hurt you, Tommy?" she gasped. "I saw you shoot—"

The pilot fairly jumped. At first glance he had recognized her as a woman. Tommy growled that he'd had to "shoot the damn fool through the arm." The pilot spoke, curiously. Evelyn looked at his arm and exclaimed. He was holding it above the wound to stop the bleeding. Evelyn looked about helplessly for something with which to bandage it.

"Make pads with your handkerchief," grunted Tommy. "Take my tie to hold them in place."

The prisoner looked curiously from one to the other. His color was returning. As Evelyn worked on his arm he seemed to grow excited at some inner thought. He spoke again, and looked at once puzzled and confirmed in some conviction when they were unable to comprehend. When Evelyn finished her first-aid task he smiled suddenly, flashing white teeth at them. He even made a little speech which was humorously apologetic, to judge by its tone. When they turned to go back to their fortress he went with them without a trace of hesitation.

"Now what?" asked Evelyn.

"They'll be looking for him in a little while," said Tommy curtly. "If we can convince him we're not enemies, he'll keep them from giving us more gas."

THE pilot was fumbling at a belt about the curious tunic he wore. Tommy watched him warily. But a pad of what seemed to be black metal came out, with a silvery-white stylus attached to it. The pilot sat down the instant they stopped and began to draw in white lines on the black surface. He drew a picture of a man and an angular flying machine, and then a sketchy, impressionistic outline of a city's towers. He drew a circle to enclose all three drawings and indicated himself, the machine, and the distant city. Tommy nodded comprehension as the pilot looked up. Then came a picture of a half-naked man shaking his fists at the three encircled sketches. The half-naked man stood beneath a roughly indicated tree-fern.

"Clever," said Tommy, as a larger circle enclosed that with the city and the machine. "He's identifying himself, and saying the Ragged Men are enemies of himself and his Golden City, too. That much is not hard to get."

He nodded vigorously as the pilot looked up again. And then he watched as a lively, tiny sketch grew on the black slab, showing half a dozen men, garbed almost as Tommy was, using weapons which could only be sub-machine guns and automatic pistols. They were obviously Jacaro's gangsters. The pilot handed over the plate and watched absorbedly as Tommy fumbled with the stylus. He drew, not well but well enough, an outline of the towers of New York. The difference in architecture was striking. There followed tiny figures of himself and Evelyn—with a drily murmured, "This isn't a flattering portrait of you, Evelyn!"—and a circle enclosing them with the towers of New York.

The pilot nodded in his turn. And then Tommy encircled the previously drawn figures of the gangsters with New York, just as the Ragged Men had been linked with the other city. And a second circle linked gangsters and Ragged Men together.

"I'M saying," observed Tommy, "that Jacaro and his mob are the Ragged Men of our world, which may not be wrong, at that."

There was no question but that the pilot took his meaning. He grinned in a friendly fashion, and winced as his wounded arm hurt him. Ruefully, he looked down at his bandage. Then he pressed a tiny stud at the top of the black-metal pad and all the white lines vanished instantly. He drew a new circle, with tree-ferns scattered about its upper third—a tiny sketch of a city's towers. He pointed to that and to the city visible through the mist—a second city, and a third, in other places. He waved his hand vaguely about, then impatiently scribbled over the middle third of the circle and handed it back to Tommy.

Tommy grinned ruefully.

"A map," he said amusedly. "He's pointed out his own city and a couple of others, and he wants us to tell him where we come from. Evelyn—er—how are we going to explain a trip through five dimensions in a sketch?"

Evelyn shook her head. But a shadow passed over their heads. The pilot leaped to his feet and shouted. There were three planes soaring above them, and the pilot in the first was in the act of releasing a smoking object over the side. At the grounded pilot's shout, he flung his ship into a frantic dive, while behind him the smoking thing billowed out a thicker and thicker cloud. His plane was nearly hidden by the vapor when he released it. It fell two hundred yards and more away, and the white mist spread and spread. But it fell short of the little hillock.

"QUICK thinking," said Tommy coolly. "He thought we had this man a prisoner, and he'd be better off dead. But—"

Their captive was shouting again. His head thrown back, he called sentence after sentence aloft while the three ships soared back and forth above their heads, soundless as bats. One of the three rose steeply and soared away toward the city. Their captive, grinning, turned and nodded his head satisfiedly. Then he sat down to wait.

Twenty minutes later a monstrous machine with ungainly flapping wings came heavily over the swamp.

It checked and settled with a terrific flapping and an even more terrific din. Half a dozen armed men waited warily for the three to approach. The golden weapons lifted alertly as they drew near. The wounded man explained at some length. His explanation was dismissed brusquely. A man advanced and held out his hands for Tommy's weapons.

"I don't like it," growled Tommy, "but we've got to think of Earth. If you get a chance, hide your gun, Evelyn."

He pushed on the safety catches and passed over his guns. The pilot he had shot down led them onto the fenced-in deck of the monstrous ornithopter. Machinery roared. The wings began to beat. They were nearly invisible from the speed of their flapping when the ship lifted vertically from the ground. It rose straight up for fifty feet, the motion of the wings changed subtly, and it swept forward.

It swung in a vast half circle and headed back across the marsh for the Golden City. Five minutes of noisy flight during which the machine flapped its way higher and higher above the marsh—which seemed more noisome and horrible still from above—and then the golden towers of the city were below. Strange and tapering and beautiful, they were. No single line was perfectly straight, nor was any form ungraceful. These towers sprang upward in clean-soaring curves toward the sky. Bridges between them were gossamerlike things that seemed lace spun out in metal. And as Tommy looked keenly and saw the jungle crowding close against the city's metal walls, the flapping of the ornithopter's wings changed again and it seemed to plunge downward like a stone toward a narrow landing place amid the great city's towering buildings.

CHAPTER VI

The Golden City

THE thing that struck Tommy first of all was the scarcity of men in the city, compared to its size. The next thing was the entire absence of women. The roar of machines smote upon his consciousness as a bad third, though they made din enough. Perhaps he ignored the machine noises because the ornithopter on which they had arrived made such a racket itself.

They landed on a paved space perhaps a hundred yards by two hundred, three sides of which were walled off by soaring towers. The fourth gave off on empty space, and he realized that he was still at least a hundred feet above the ground. The ornithopter landed with a certain skilful precision and its wings ceased to beat. Behind it, the two fixed-wing machines soared down, leveled, hovered, and settled upon amazingly inadequate wheels. Their pilots got out and began to push them toward one side of the landing area. Tommy noticed it, of course. He was noticing everything, just now. He said amazedly:

"Evelyn! They lauch these planes with catapults like those our battleships use! They don't take off under their own power!"

The six men on the ornithopter put their shoulders to their machine and trundled it out of the way. Tommy blinked at the sight.

"No field attendants!" He gazed out across the open portion of the land area and saw an elevated thoroughfare below. Some sort of vehicle, gleaming like gold, moved swiftly on two wheels. There was a walkway in the center of the street with room for a multitude. But only two men were in sight upon it. "Lord!" said Tommy. "Where are the people?"

There was brief talk among the crew of the ornithopter. Two of them picked up Tommy's weapons, and the pilot he had wounded made a gesture indicating that he should follow. He led the way to an arched door in the nearest tower. A little two-wheeled car was waiting. They got into it and the pilot fumbled with the controls. As he worked at it—rather clumsily on account of his arm—the rest of the ornithopter's crew came in. They wheeled out another vehicle, climbed into it, and shot away down a sloping passage.

THEIR own vehicle followed and emerged upon the paved and nearly empty thoroughfare. Tall buildings rose all about them, with curved walls soaring dizzily skyward. There was every sign of a populous city, including the dull drumming roar of many machines, but the streets were empty. The little machine moved swiftly for minutes. Twice it swung aside and entered a sloping incline. Once it went up. The other time it dived down seventy feet on a four-hundred-foot ramp. Then it swung sharply to the right, meandered into a street-level way leading into the heart of a monster building, and stopped. And in all its travel it had not passed fifty people.

The pilot-turned-chauffeur turned and grinned amiably, and led the way again. Steps—twenty or thirty of them. Then they emerged suddenly into a vast room. It must have been a hundred and fifty feet long, fifty wide, and nearly as high. It was floored with alternate blocks of what seemed to be an iron-hard black wood and the omnipresent golden metal. Columns and pilasters about the place gave forth the same subdued deep golden glow. Light streamed from panels inset in the wall and ceiling—a curious saffron-red light. There was a massive table of the hard black wood. Chairs with curiously designed backs were ranged about it. They were benches, really, but they served the purpose of chairs. Each was too narrow to hold more than one person. The room was empty.

They waited. After a long time a man in a blue tunic came into the room and sat down on one of the benches. A long time later, another man came in, in red; and another and another, until there were a dozen in all. They regarded Tommy and Evelyn with a weary suspicion. One of them—an old man with a white beard—asked questions. The pilot answered them. At a word, the two men with Tommy's weapons placed them on the table. They were inspected casually, as familiar things. They probably were, since some of Jacaro's gunmen had been killed in a fight in this city. Another question.

The pilot explained briefly and offered Tommy the black-metal pad again. It still contained the incomplete map of a hemisphere, and was obviously a repetition of the question of where he came from.

TOMMY took it, frowning thoughtfully. Then an idea struck him. He found the little stud which, pressed by the pad's owner, had erased the previous drawings. He pressed it and the lines disappeared. And Tommy drew, crudely enough, that complicated diagram which is supposed to represent a cube which is a cube in four dimensions: a tesseract. Upon one surface of the cube he indicated the curving towers of the Golden City. Upon a surface representing a plane beyond the three dimensions of normal experience, he repeated the angular tower structures of New York. He shrugged rather hopelessly as he passed it over, but to his amazement it was understood at once.

The little black pad passed from hand to hand and an animated discussion took place. One rather hard-faced man was the most animated of all. The bearded old man demurred. The hard-faced man insisted. Tommy could see that his pilot's expression was becoming uneasy. But then a compromise seemed to be arrived at. The bearded man spoke a single, ceremonial phrase and the twelve men rose. They moved toward various doors and one by one left, until the room was empty.

But the pilot looked relieved. He grinned cheerfully at Tommy and led the way back to the two-wheeled vehicle. The two men with Tommy's weapons vanished. And again there was a swift, cyclonelike passage along empty ways with the throbbing of machinery audible everywhere. Into the base of a second building, up endless stairs, past innumerable doors. It seemed to Tommy that he heard voices behind some of them, and they were women's voices.

At a private, triple knock a door opened wide, and the pilot led the way into a room, closed and locked the door behind him, and called. A woman's voice cried out in astonishment. Through an inner arch a woman came running eagerly. Her face went blank at sight of Tommy and Evelyn, and her hand flew to a tiny golden object at her waist. Then, at the pilot's chuckle, she flushed vividly.

HOURS later, Tommy and Evelyn were able to talk it over. They were alone then, and could look out an oval window upon the Golden City all about them. It was dark, but saffron-red panels glowed in building walls all along the thoroughfares, and tiny glowing dots in the soaring spires of gold told of people within other dwellings like this.

"As I see it," said Tommy restlessly, "the Council—and it must have been that in the big room to-day—put us in our friend's hands to learn the language. He's been working with me four hours, drawing pictures, and I've been writing down words I've learned. I must have several hundred of them. But we do our best talking with pictures. And Evelyn, this city's in a bad fix."

Evelyn said irrelevantly: "Her name in Ahnya, Tommy, and she's a dear. We got along beautifully. I'll bet I found out things you don't even guess at."

"You probably have," admitted Tommy, frowning. "Check up on this: our friend's name is Aten, and he's an air-pilot and also has something to do with growing foodstuffs in some special towers where they grow crops by artificial light only. Some of the plants he sketched look amazingly like wheat, by the way. The name of the town is"—he looked at his notes—"Yugna. There are some other towns, ten or twelve of them. Rahn is the nearest, and it's worse off than this one."

"Of course," said Evelyn, smiling. "They use *cuyal* openly, there!"

"How'd you learn all that?" demanded Tommy.

"Ahnya told me. We made gestures and smiled at each other. We understood perfectly. She's crazy about her husband, and I—well, she knows I'm going to marry you, so. . . ."

Tommy grunted.

"I suppose she explained with a smile and gestures just how much of a strain it is, simply keeping the city going?"

"Of course," said Evelyn calmly. "The city's fighting against the jungle, which grows worse all the time. They used to grow their foodstuffs in the open fields. Then within the city. Now they use empty towers and artificial light. I don't know why."

TOMMY grunted again.

"This planet's just had, or is having, a change of geologic period," he explained, frowning. "The plants people used to live on aren't adapted to the new climate and new plants fit for food are scarce. They have to grow food under shelter, now, and their machines take an abnormal amount of supervision—I don't know why. The air-conditions for the food plants; the machines that fight back the jungle creepers which thrive in the new climate and try to crawl into the city to smother it; the power machines; the clothing machines—a million machines have to be kept going to keep back the jungle and fight off starvation and just hold on doggedly to the bare fact of civilization. And they're short-handed. The law of diminishing returns seems to operate. They're trying to maintain a civilization higher than their environment will support. They work until they're ready to drop, just to stay in the same place. And the monotony and the strain makes some of them take to *cuyal* for relief."

He surveyed the city from the oval window, frowning in thought.

"It's a drug which grows wild," he added slowly. "It peps them up. It makes the monotony and the weariness bearable. And then, suddenly, they break. They hate the machines and the city and everything they ever knew or did. It's a sort of delayed-action psychosis which goes off with a bang. Some of them go amuck in the city, using their belt-weapons until they're killed. More of them bolt for the jungle. The city loses better than one per cent of its population a year to the jungle. And then they're Ragged Men, half mad at all times and wholly mad as far as the city and its machines are concerned."

Evelyn linked her arm in his.

"Somehow," she told him, smiling, "I think one Thomas Reames is working out ways and means to help a city named Yugna."

"Not yet," said Tommy grimly. "We have to think of Earth. Not everybody in the Council approved of us. Aten told me one chap argued that we ought to be shoved out into the jungle again as compatriots of Jacaro. And the machines were especially short-handed to-day because of a diversion of labor to get ready something monstrous and really deadly to send down the Tube to Earth. We've got to find out what that is, and stop it."

BUT on the second day afterward, when he and Evelyn were summoned before the Council again, he still had not found out. During those two days he learned many other things, to be sure: that Aten for instance, was relieved from duty at the machines only because he was wounded; that the power of the main machines came from a deep bore which brought up superheated steam from the source of boiling springs long since built over; that iron was a rare metal, and consequently there was no dynamo in the city and magnetism was practically an unknown force; that electrokinetics was a laboratory puzzle—or had been, when there was leisure for research—while the science of electrostatics had progressed far past its state on Earth. The little truncheonlike weapons carried a stored-up static charge measurable only in hundreds of thousands of volts, which could be released in flashes which were effective up to a hundred feet or more.

And he learned that the thermit-throwers actually spat out in normal operation tiny droplets of matter Aten could not describe clearly, but which seemed to be radioactive with a period of five minutes or less; that in Rahn, the nearest other city, *cuyal* was taken openly, and the jungle was growing into the town with no one to hold it back; that two generations since there had been twenty cities like this one, but that a bare dozen still survived; that there was a tradition that human beings had come upon this planet from another world where other human beings had harried them, and that in that other world there were divers races of humanity, of different colors, whereas in the world of the Golden City all mankind was one race; that Tommy's declaration that he came from another group of dimensions had been debated and, on re-examination of Jacaro's Tube, accepted, and that there was keen argument going on as to the measures to be taken concerning it.

THESE things Tommy had learned, and he and Evelyn went to their second interrogation by the city's Council armed with written vocabularies of nearly a thousand words, which they had sorted out and made ready for use. But they were still ignorant of the weapons the Golden City might use against Earth.

The Council meeting took place in the same hall, with its alternating black-and-gold flooring and the saffron-red lighting panels casting a soft light everywhere. This was a scheduled meeting, foreseen and arranged for. The twelve chairs above the heavy table were all occupied from the first. But Tommy realized that the table had been intended to seat a large number of councilors. There were guards stationed formally behind the chairs. There were spectators, auditors of the deliberations of the Council. They were dressed in a myriad colors, and they talked quietly among themselves; but it seemed to Tommy that nowhere had he seen weariness, as an ingrained expression, upon so many faces.

Tommy and Evelyn were led to the foot of the Council table. The bearded old man in blue began the questioning. As Keeper of Foodstuffs—according to Aten—he was a sort of presiding officer.

Tommy answered the questions crisply. He had known what they would be, and he had developed a vocabulary to answer them. He told them of Earth, of Professor Denham, of his and the professor's experiments. He outlined the first experiment with the Fifth-Dimension catapult and the result of it—when the Golden City had sent the Death Mist to wipe out a band of Ragged Men who had captured a citizen, and after him Evelyn and her father.

THIS they remembered. Nods went around the table. Tommy told them of Jacaro, stressing the fact that Jacaro was an outlaw, a criminal upon Earth. He explained the theft of the model Tube, and how it was that their first contact with Earth had been with the dregs of Earth humanity. On behalf of his countrymen he offered reparation for all the damage Jacaro and his men had done. He proposed a peaceful commerce between worlds, to the infinite benefit of both.

There was silence until he finished. The faces before him were immobile. But a hawk-faced man in brown asked dry questions. Were there more races than one upon Earth? Were they of diverse colors? Did they ever war among themselves? At Tommy's answers the atmosphere seemed to change. And the hawk-faced man rose to speak.

Tommy and Evelyn, he conceded caustically, had certainly come from another world. Their own most ancient legends described just such a world as his: a world of many races of many colors, who fought many wars among themselves. Their ancestors had fled from such a world, according to legend through a twisting cavern which they had sealed behind them. The conditions Tommy described had been the cause of their ancestors' flight. They, the people of Yugna, would do well to follow the example of their forebears: strip these Earth folk of their weapons, exile them to the jungles, destroy the Tube through which the Mist of Many Colors had been sent. All should be as in past ages.

TOMMY opened his mouth to answer, but another man sprang to his feet. His face alone was not weary and worn. As he stood up, Aten murmured *"Cuyal!"* and Tommy understood that this man used the drug which was destroying the city's citizens, but gave a transient energy to its victims. He spoke in fiery phrases, urging action which would be drastic and certain. He spoke confidently, persuasively. There was a rustling among those who watched and listened to the debate. He had caught at their imagination.

Evelyn, exerting every faculty to understand, saw Tommy's lips set grimly.

"What—what is it?" she whispered. "I—I don't understand. . . ."

Tommy spoke in a savage growl.

"He says," he told her bitterly, "that in one blow they can defeat both the jungle and the invaders from Earth. In past ages their ancestors were faced by enemies they could not defeat. They fled to this world. Now they are faced by jungles they cannot defeat. He proposes that they flee to our world. The Death Mist is a toy, he reminds them, compared with gases they know. There is a gas of which one part in ten hundred million is fatal! In a hundred of their days they can make and send through the Tube enough of it to kill every living thing on Earth. They've figures on the Earth's size and atmosphere from me, damn 'em! And he reminds them that that deadly gas changes of itself into a harmless substance. He urges them to gas Earth humanity out of existence, call upon the other cities of this world, and presently move through the Tube to Earth. They'll carry their food-plants, rebuild their cities, and abandon this planet to the jungles and the Ragged Men. And the hell of it is, they can do it!"

A sudden approving buzz went through the Council hall.

CHAPTER VII

The Fleet from Rahn

THE approval of the citizens of Yugna was not enthusiastic. It was desperate. Their faces were weary. Their lives were warped. They had been fighting since birth against the encroachment of the jungle, which until the days of their grandparents had been no menace at all. But for two generations these people had been foredoomed, and they knew it. Nearly half the cities of their race were overwhelmed and their inhabitants reduced to savage hunters in the victorious jungles. Now the people of Yugna saw a chance to escape from the jungle. They were offered rest. Peace. Relaxation from the desperate need to serve insatiable machines. Sheer desperation impelled them. In their situation, the people of Earth would annihilate a solar system for relief, let alone the inhabitants of a single planet.

Shouts began to be heard above the uproar in the Council hall—approving shouts, demands that one be appointed to conduct the operation which was to give them a new planet on which to live, where their food-plants would thrive in the open, where jungles would no longer press on them.

Tommy's face went savage and desperate, itself. He clenched and unclenched his hands, struggling among his meagre supply of words for promises of help from Earth, which promises would tip the scales for peace again. He raised his voice in a shout for attention. He was unheard. The Council hall was in an uproar of desperate approval. The orator stood flushed and triumphant. The Council members looked from eye to eye, and slowly the old, white-bearded Keeper of Foodstuffs placed a golden box upon the table. He touched it in a certain fashion, and handed it to the next man. That second man touched it, and passed it to a third. And that man. . . .

A HUSH fell instantly. Tommy understood. The measure was being decided by solemn vote. The voting device had reached the fifth man when there was a frantic clatter of footsteps, a door burst in, and babbling men stood in the opening, white-faced and stammering and overwhelmed, but trying to make a report.

Consternation reigned, incredulous, amazed consternation. The bearded old man rose dazedly and strode from the hall with the rest of the Council following him. A pause of stunned stupefaction, and the spectators in the hall rushed for other doors.

"Stick to Aten," snapped Tommy. "Something's broken, and it has to be our way. Let's see what it is."

He clung alike to Evelyn and to Aten as the air-pilot fought to clear a way. The doors were jammed. It was minutes before they could make their way through and plunge up the interminable steps Aten mounted, only to fling himself out to the open air. Then they were upon a flying bridge between two of the towers of the city. All about the city human figures were massing, staring upward.

And above the city swirled a swarm of aircraft. Tommy counted three of the clumsy ornithopters, high and motelike. There were twenty or thirty of the small, one-man craft. There were a dozen or more two-man planes. And there were at least forty giant single-wing ships which looked as if they had been made for carrying freight. They soared and circled above the city in soundless confusion. Before each of them glittered something silvery, like glass, which was not a screw propeller but somehow drew them on.

The Council was massed two hundred yards away. A single-seater dived downward, soared and circled noiselessly fifty yards overhead, and its pilot shouted a message. Then he climbed swiftly and rejoined his fellows. The men about Tommy looked stunned, as if they could not believe their ears. Aten seemed stricken beyond the passability of reaction.

"I GOT part of it," snapped Tommy, to Evelyn's whispered question. "I think I know the rest. Aten!" He snapped question after question in his inadequate phrasing of the city's tongue. Evelyn saw Aten answer dully, then bitterly, and then, as Tommy caught his arm and whispered savagely to him, Aten's eyes caught fire. He nodded violently and turned on his heel.

"Come on!" And Tommy seized Evelyn's arm again.

They followed closely as Aten wormed his way through the crowd. They raced behind him downstairs and through a door into a dusty and unvisited room. It was a museum. Aten pointed grimly.

Here were the automatic pistols taken from those of Jacaro's men who had been killed, a nasty submachine gun which had been Tommy's, and grenades—Jacaro's. Tommy checked shell calibres and carried off a ninety-shot magazine full of explosive bullets, and a repeating rifle.

"I can do more accurate work with this than the machine gun," he said cryptically. "Let's go!"

It was not until they were racing away from the Council building in one of the two-wheeled vehicles that Evelyn spoke again.

"I—understand part," she said unsteadily. "Those planes overhead are from Rahn. And they're threatening—"

"Blackmail," said Tommy between clenched teeth. "It sounds like a perfectly normal Earth racket. A fleet from Rahn is over Yugna, loaded with the Death Mist. Yugna pays food and goods and women or it's wiped out by gas. Further, it surrenders its aircraft to make further collections easier. Rahn refuses to die, though it's let in the jungle. It's turned pirate stronghold. Fed and clothed by a few other cities like this one, it should be able to hold out. It's a racket, Evelyn. A stick-up. A hijacking of a civilized city. Sounds like Jacaro."

THE little vehicle darted madly through empty highways, passing groups of men staring dazedly upward at the soaring motes overhead. It darted down this inclined way, up that one. It shot into a building and around a winding ramp. It stopped with a jerk and Aten was climbing out. He ran through a doorway, Tommy and Evelyn following. Planes of all sizes, still and lifeless, filled a vast hall. And Aten strugged with a door mechanism and a monster valve swung wide. Then Tommy threw his weight with Aten's to roll out the plane he had selected. It was a small, triangular ship, with seats for three, but it was heavy. The two men moved it with desperate exertion. Aten pointed, panting, to a slide-rail and it took them five minutes to get the plane about that rail and engage a curious contrivance in a slot in the ship's fuselage.

"Tommy," said Evelyn, "you're not going to—"

"Run away? Hardly!" said Tommy. "We're going up. I'm going to fight the fleet with bullets. They don't have missile-weapons here, and Aten will know the range of their electric-charge outfits."

"I'm coming too," said Evelyn desperately.

Tommy hesitated, then agreed.

"If we fail they'll gas the city anyway. One way or the other. . . ."

There was a sudden rumble as Evelyn took her place. The plane shot forward with a swift smooth acceleration. There was no sound of any motor. There was no movement of the glittering thing at the forepart of the plane. But the ship reached the end of the slide and lifted, and then was in mid-air, fifty feet above the vehicular way, a hundred feet above the ground.

TOMMY spoke urgently. Aten nodded. The ship had started to climb. He leveled it out and darted straight forward. He swung madly to dodge a soaring tower. He swept upward a little to avoid a flying bridge. The ship was traveling with an enormous speed, and the golden walls of the city flashed past below them and they sped away across feathery jungle.

"If we climbed at once," observed Tommy shortly, "they'd think we meant to fight. They might start their gassing. As it is, we look like we're running away."

Evelyn said nothing. For five

miles the plane fled as if in panic. Evelyn clung to the filigree side of the cockpit. The city dwindled behind them. Then Aten climbed steeply. Tommy was looking keenly at the glittering thing which propelled the ship. It seemed like a crystal gridwork, like angular lace contrived of glass. But a cold blue flame burned in it and Tommy was obscurely reminded of a neon tube, though the color was wholly unlike. A blast of air poured back through the grid. Somehow, by some development of electro-statics, the "static jet" which is merely a toy in Earth laboratories had become usable as a means of propelling aircraft.

Back they swept toward the Golden City, five thousand feet or more aloft. The ground was partly obscured by the hazy, humid atmosphere, but glinting sun-reflections from the city guided them. Soaring things took shape before them and grew swiftly nearer. Tommy spoke again, busily loading the automatic rifle with explosive shells.

Aten swung to follow a vast dark shape in its circular soaring, a hundred feet above it and a hundred yards behind. Wind whistled, rising to a shriek. Tommy fired painstakingly.

THE other plane zoomed suddenly as a flash of blue flame spouted before it. It dived, then, fluttering and swooping, began to drift helplessly toward the spires of the city below it.

"Good!" snapped Tommy. "Another one, Aten."

Aten made no reply. He flung his ship sidewise and dived steeply before a monstrous freight carrier. Tommy fired deliberately as they swept past. The propelling grid flashed blue flame in a vast, crashing flame. It, too, began to flutter down.

Tommy did not miss until the fifth time, and Aten turned with a grimace of disappointment. Tommy's second shot burst in a freight compartment and a man screamed. His voice carried horribly in the silence of these heights. But Tommy shot again, and again, and there was a satisfying blue flash as a fifth big ship went fluttering helplessly down.

Aten began to circle for height. Tommy refilled the magazine.

"I'm bringing 'em down," he explained unnecessarily to Evelyn, "by smashing their propellers. They have to land, and when they land they're hostages—I hope!"

Confusion became apparent among the hostile planes. The one Yugna ship was identified as the source of disaster. Tommy worked his rifle with a cold fury. He aimed at no man, but the propelling grids were large. For a one-man ship they were five feet in diameter, and for the big freight ships they were circles fifteen feet across. They were perfect targets, and Aten seemed to grasp the necessary tactics almost instantly. Dead ahead or from straight astern, Tommy would not miss a shot. The fleet of Rahn went fluttering downward. Fifteen of the biggest were down, and six of the two-man planes. A sixteenth and seventeenth flashed at their bows and drifted helplessly. . . .

THEN the one-man ships attacked. Six of them at once. Aten grinned and dived for all of them. One by one, Tommy smashed their crystal grids and watched them sinking unsteadily toward the towers of the city. As his own ship drove over them, little golden flashes licked out. Electric-charge weapons. One flash struck the wing-tip of their plane and flame burst out, but Aten flung the ship into a mad whirl in which the blaze was blown out.

Another freight ship helpless—and another. Then the air fleet of Rahn turned and fled. The ornithopters winged away in heavy, creaking terror. The others dived for speed and flattened out hardly above the tree-fern jungle. They streaked away in ignominious panic. Aten darted and circled above them and, as Tommy failed to fire, turned and went racing back toward the city.

"After the first ones went down," observed Tommy, "they knew that if they gassed the city we'd shoot them down into their own gas cloud. So they ran away. I hope this gives us a pull."

The city's towers loomed before them. The lacy bridges swarmed with human figures. Somewhere a fight was in progress about a grounded plane from Rahn. Others seemed to have surrendered sullenly on alighting. For the first time Tommy saw the city as a thronging mass of humanity, and for the first time he realized how terrible must be the strain upon the city if with so large a population so few could be free for leisure in normal times.

The little plane settled down and landed lightly. There were a dozen men on the landing platform now, and they were herding disarmed men from Rahn away from a big ship Tommy had brought down. Tommy looked curiously at the prisoners. They seemed freer than the inhabitants of Yugna. Their faces showed no such signs of strain. But they did not seem well-fed, nor did they appear as capable or as resolute.

"*Cuyal,*" said Aten in an explanatory tone, seeing Tommy's expression. He put his shoulder to the big ship, to wheel it back into its shed.

"You son of a gun," grunted Tommy, "it's all in the day's work to you, fighting an invading fleet!"

A messenger came panting through the doorway. Tommy grinned.

"The Council wants us, Evelyn. Now maybe they'll listen."

THE atmosphere of the resumed Council meeting was, as a matter of fact, considerably changed. The white-bearded Keeper of Foodstuffs thanked them with dignity. He invited Tommy to offer advice, since his services had proved so useful.

"Advice?" said Tommy, in the halting, fumbling phrases he had slaved to acquire. "I would put the prisoners from Rahn to work at the machines, releasing citizens." There was a buzz of approval, and he added drily in English: "I'm playing politics, Evelyn." Again in the speech of Yugna he added: "And I would have the fleet of Yugna soar above Rahn, not to demand tribute as that city did, but to disable all its aircraft, so that such piracy as to-day may not be tried again!" There was a second buzz of approval. "And third," said Tommy earnestly, "I would communicate with Earth, rather than assassinate it. I would acquire the science of Earth for the benefit of this world, rather than use the science of this world to annihilate that! I—"

For the second time the Council meeting was interrupted. An armed messenger came pounding into the room. He reported swiftly. Tommy grasped Evelyn's wrist in what was almost a painful grip.

"Noises in the Tube!" he told her sharply. "Earth-folk doing something in the Tube Jacaro came through. Your father. . . ."

There was an alert silence in the Council hall. The white-bearded old man had listened to the messenger. Now he asked a grim question of Tommy.

"They may be my friends, or

your enemies," said Tommy briefly. "Mass thermit-throwers and let me find out!"

IT was the only possible thing to do. Tommy and Evelyn went with the Council, in a body, in a huge wheeled vehicle that raced across the city. Lingering groups still searched the sky above them, now blessedly empty again. But the Council's vehicle dived down and down to ground level, where the rumble of machines was loud indeed, and then turned into a tunnel which went down still farther. There was feverish activity ahead, where it stopped, and a golden thermit-thrower came into sight upon a dull-colored truck.

Questions. Feverish replies. The white-bearded man touched Tommy on the shoulder, regarding him with a peculiarly noncommittal gaze, and pointed to a doorway that someone was just opening. The door swung wide. There was a confusion of prismatically-colored mist within it, and Tommy noticed that tanks upon tanks were massed outside the metal wall of that compartment, and seemingly had been pouring something into the room.

The mist drew back from the door. Saffron-red lighting panels appeared dimly, then grew distinct. There were small, collapsed bundles of fur upon the floor of the storeroom being exposed to view. They were, probably, the equivalent of rats. And then the last remnant of mist vanished with a curiously wraithlike abruptness, and the end of Jacaro's Tube came into view.

Tommy advanced, Evelyn clinging to his sleeve. There were clanking noises audible in this room even above the dull rumble of the city's machines. The noises came from the Tube's mouth. It was four feet and more across, and it projected at a crazy angle out of a previously solid wall.

"Hello!" shouted Tommy. "Down the Tube!"

THE clattering noise stopped, then continued at a faster rate.

"The gas is cut off!" shouted Tommy again. "Who's there?"

A voice gasped from the Tube's depths:

"It's him!" The tone was made metallic by echoing and reechoing in the bends of the Tube, but it was Smithers. "We're comin', Mr. Reames."

"Is—is Daddy there?" called Evelyn eagerly. "Daddy!"

"Coming," said a grim voice.

The clattering grew nearer. A goggled, gas-masked head appeared, and a body followed it out of the Tube, laden with a multitude of burdens. A second climbed still more heavily after the first. The brightly-colored citizens of the Golden City reached quietly to the weapons at their waists. A third voice came up the Tube, distant and nearly unintelligible. It roared a question.

Smithers ripped off his gas mask and said distinctly:

"Sure we're through. Go ahead. An' go to hell!"

Then there was a thunderous detonation somewhere down in the Tube's depths. The visible part of it jerked spasmodically and cracked across. A wisp of brownish smoke puffed out of it, and the stinging reek of high explosive tainted the air. Then Evelyn was clinging close to her father, and he was patting her comfortingly, and Smithers was pumping both of Tommy's hands, his normal calmness torn from him for once. But after a bare moment he had gripped himself again. He unloaded an impressive number of parcels from about his person. Then he regarded the citizens of the Golden City with an impersonal, estimating gaze, ignoring twenty weapons trained upon him.

"Those damn fools back on Earth," he observed impassively, "decided the professor an' me was better off of it. So they let us come through the Tube before they blew it up. We brought the explosive bullets, Mr. Reames. I hope we brought enough."

And Tommy grinned elatedly as Denham turned to crush his hands in his own.

CHAPTER VIII

"Those Devils Have Got Evelyn!"

THAT night the three of them talked, on a high terrace with most of the Golden City spread out below them. Over their heads, lights of many colors moved and shifted slowly in the sky. There were a myriad glowing specks of saffron-red about the ways of the city, and the air was full of fragrant odors. The breath of the jungle reached them even a thousand feet above ground. And the dull, persistent roar of the machines reached them too. There were five people on the terrace: Tommy, Denham, Smithers, Aten and the white-bearded old Keeper of Foodstuffs. He looked on as the Earthmen talked.

"We're marooned," Tommy was saying crisply, "and for the time being we've got to throw in with these people. I believe they came from Earth originally. Four, five thousand years ago, perhaps. Their tale is of a cave they sealed up behind them. It might have been a primitive Tube, if such a thing can be imagined."

Denham filled his pipe and lighted it meditatively.

"Half the American Indian tribes," he observed drily, "had legends of coming originally from an underworld. I wonder if Tubes are less your own invention than we thought?"

Tommy shrugged.

"In any case, Earth is safe."

"Is it?" insisted Denham. "You say they understood at once when you talked of dimension-travel. Ask the old chap there."

TOMMY frowned, then labored with the question. The bearded old man spoke gravely. At his answer, Tommy grimaced.

"Datl's gone looking for the cave their legends tell of," he said reluctantly. "He's the lad who wanted the city to gas Earth with some ghastly stuff they know of, and move over when the gas was harmless again. But the cave has been lost for centuries, and it's in the torrid zone—which *is* torrid! We're near the North Pole of this planet, and it's tropic here. It must be mighty hot at the equator. Datl took a ship and supplies and sailed off. He may be killed. In any case it'll be some time before he's dangerous. Meanwhile, as I said, we're marooned."

"And more," said Denham deliberately. "By the time the authorities halfway believed me, and Von Holtz could talk, there were more deaths from the Death Mist. It wiped out a village, clean. So when it was realized that I'd caused it—or that was their interpretation—and was the only man who could cause it again, why, the authorities thought it a splendid idea for me to come through the Tube. They invited me to commit suicide. My knowledge was too dangerous for a man to have. So," he added grimly, "I have committed suicide. We will not be welcomed back on Earth, Tommy."

Tommy made an impatient gesture.

"Worry about that later," he said impatiently. "Right now there's a war on. Rahn's desperate, and the prisoners we took this morning say Jacaro and his gunmen are there, advising them. Ragged Men have joined in to help kill civilized humans. And they've still got aircraft."

"Which can still bombard this city," observed Denham. "Can't they?"

Tommy pointed to the many-colored beams of light playing through the sky overhead.

"No. Those lights were invented to guide night-flying planes back home. They're static lights—cold lights, by the way—and they register powerfully when a static-discharge propeller comes within range of them. If Rahn tries a night attack, Aten and I take off and shoot them down again. That's that. But we've got to design gas masks for these people, and I think I can persuade the Council to send over and take all Rahn's aircraft away to-morrow. But the real emergency is the jungle."

HE expounded the situation of the city as he understood it. He labored painstakingly to make his meaning clear while Denham blew meditative smoke rings and Smithers listened quietly. But when Tommy had finished, Smithers said in a vast calm:

"Say, Mr. Reames, y'know I asked you to get somebody to take me through some o' these engine rooms. That's kinda my specialty. An' these folks are good, no question! There's engines—even steam engines—we couldn't build on Earth. But, my Gawd, they're dumb! There ain't a piece of automatic machinery on the place. There's one man to every motor, handlin' the controls or the throttle. They got stuff we couldn't come near, but they never thought of a steam governor."

Tommy turned kindling eyes upon him. "Go on!"

"Hell," said Smithers, "gimme some tools an' I'll go through one shop an' cut the workin' force in half, just slammin' governors, reducin' valves, an' automatic cutoffs on the machines I understand!"

Tommy jumped to his feet. He paced up and down, then halted and began to spout at Aten and the Keeper of Foodstuffs. He gesticulated, fumbling for words, and hunted absurdly for the ones he wanted among his written lists, and finally was drawing excitedly on Aten's black-metal tablet. Smithers got up and looked over his shoulder.

"That ain't it, Mr. Reames," he said slowly. "Maybe I. . . ."

TOMMY pressed the stud that erased the page. Smithers took the tablet and began to draw painstakingly. Aten, watching, exclaimed suddenly. Smithers was drawing an actual machine, actually used in the Golden City, and he was making a working sketch of a governor so that it would operate without supervision while the steam pressure continued. Aten began to talk excitedly. The Keeper of Foodstuffs took the tablet and examined it. He looked blank, then amazed, and as the utterly foreign idea of a machine which controlled itself struck home, his hands shook and color deepened in his cheeks.

He gave an order to Aten, who dashed away. In ten minutes other men began to arrive. They bent over the drawing. Excited comments, discussions and disputes began. A dawning enthusiasm manifested itself. Two of them approached Smithers respectfully, with shining eyes. They drew their tablets from their belts, rather skilfully drew the governor he had indicated in larger scale, and by gestures asked for more detailed plans. Smithers stood up to go with them.

"You're a hero, now, Smithers," Tommy informed him exultantly. "They'll work you to death and call you blessed!"

"Yes, sir," said Smithers. "These fellas are right good mechanics. They just happened to miss this trick." He paused. "Uh—where's Miss Evelyn?"

"With Aten's — wife," said Tommy. This was no time to discuss the marital system of Yugna. "We were prisoners until this morning. Now we're guests of honor. Evelyn's talking to a lot of women and trying to boost our prestige."

SMITHERS went over to the gesticulating group of draftsmen. He settled down to explain by drawings, since he had not a word of their language. In a few minutes a group went rushing away with the sketch tablets held jealously to their breasts, bound for workshops. Other men appeared to present new problems. A wave of sheer enthusiasm was in being. A new idea which would lessen the demands of the machines was a godsend to these folk.

Then Denham blew a smoke ring and said meditatively:

"I think I've got something too, Tommy. Ultra-sonic vibrations. Sound waves at two to three hundred thousand per second. Air won't carry them. Liquids will. They use 'em to sterilize milk, killing the germs by sound waves carried through the fluid. I think we can start some ultra-sonic generators out there that will go through the wet soil and kill all vegetation within a given range. We might clear away the jungle for half a mile or so and then use ultra-sonic beams to help it clear while new food-plants are tried out."

Tommy's eyes glowed.

"You've given yourself a job! We'll turn this planet upside down."

"We'll have to," said Denham drily. "This city may believe in you, but there are others, and these folk are a little too clever. There's no reason why some other city shouldn't attack Earth, if they seriously attack the problem of building a Tube."

Tommy ground his teeth, frowning. Then he started up. There was a new noise down in the city. A sudden flare of intolerable illumination broke out. There was an explosion, many screams, then the yelling tumult of men in deadly battle.

EVERY man on the tower terrace was facing toward the noise, staring. The white-bearded man gave an order, deliberately. Men rushed. But as they swarmed toward an exit, a green beam of light appeared near the uproar. It streaked upward, wavering from side to side and making the golden walls visible in a ghostly fashion. It shivered in a hasty rhythm.

Aten groaned, almost sobbed. There was another flash of that unbearable actinic flame. A thermit-thrower was in action. Then a third flash. This was farther away. The tumult died suddenly, but the green light-beam continued its motion.

Tommy was snapping questions. Aten spoke, and choked upon his words. Tommy swore in a sudden raging passion and then turned a chalky face toward the other two men from Earth.

"The prisoners!" he said in a hoarse voice. "The men from Rahn! They broke loose. They rushed an arsenal. With hand weapons and a thermit-thrower they fought their way to a place where the big vehicles are kept. They raided a dwelling-tower on the way and seized women. They've gone off on the metal roads through the jungle!" He tried to ease his collar. Aten, still watching the green beam, croaked another sentence. "Those devils have got Evelyn!" cried Tommy hoarsely. "My God! Aten's wife, and his. . . ." He jerked a hand toward the Councilor. "Fifty women—gone through the jungle with them, toward Rahn! Those devils have got Evelyn!"

He whirled upon Aten, seizing his shoulder, shaking the man as he roared questions.

"No chance of catching them." Far away, in the jungle, the infinitely vivid actinic flame blazed for several seconds. "They've sprayed thermit on the road. It's melted and ruined. It'd take hours to haul the ground vehicles past the gap. They've got arms and lights. They can fight off the beasts and Ragged Men. They'll make Rahn. And then"—he shook with the rage that possessed him—"Jacaro's there with those gunmen of his and his friends the Ragged Men!"

HE seemed to control himself with a terrific effort. He turned to the white-bearded Councilor, whose bearing was that of a man stunned by disaster. Tommy spoke measuredly, choosing words with a painstaking care, clipping the words crisply as he spoke.

The Councilor stiffened. Old as he was, an undeniable fighting light came into his eyes. He barked orders right and left. Men woke from the paralysis of shock and fled upon errands of his command. And Tommy turned to Denham and Smithers.

"The women will be safe until dawn," he said evenly. "Our late prisoners can't lose the way—aluminum roads that are no longer much used lead between all the cities—but they won't dare stop in the jungles. They'll go straight on through. They should reach Rahn at dawn or a little before. And at dawn our air fleet will be over the city and they'll give back the women, unharmed, or we'll turn their own trick on them, by God! It'd be better for Evelyn to die of gas than as—as the Ragged Men would kill her!"

His hands were clenched and he breathed noisily for an instant. Then he swallowed and went on in the same unnatural calm:

"Smithers, you're going to stay behind, with part of the air fleet. You'll get aloft before dawn and shoot down any strange aircraft. They might try to stalemate us by repeating their threat, with our guns over Rahn. I'll give orders."

He turned again to the Councilor, who nodded, glanced at Smithers, and repeated the command.

"You, sir," he spoke to Denham, "you'll come with me. It's your right, I suppose. And we'll go down and get ready."

He led the way steadily toward a door. But he reached up to his collar, once, as if he were choking, and ripped away collar and coat and all, unconscious of the resistance of the cloth.

THAT night the Golden City made savage preparation for war. Ships were loaded and ranged in order. Crews armed themselves, and helped in the loading and arming of other ships. Oddly enough, it was to Tommy that men came to ask if the directing apparatus for the Death Mist should be carried. The Death Mist could, of course, be used as a gas alone, drifting with the wind, or it could be directed from a distance. This had been done on Earth, with the directional impulses sent blindly down the Tube merely to keep the Mist moving always. The controlling apparatus could be carried in a monster freight plane. Tommy ordered it done. Also he had the captured planes from Rahn refitted for flight by replacing their smashed propelling grids. Fresh crews of men for these ships organized themselves.

When the fleet took off there was only darkness in all the world. The unfamiliar stars above shone bright and very near as Tommy's ship, leading, winged noiselessly up and down and straight away from the play of prismatic lights above the city. Behind him, silhouetted against that many-colored glow, were the angular shapes of many other noiseless shadows. The ornithopters with their racket would start later, so the planes would be soaring above Rahn before their presence was even suspected. The rest of the fleet flew in darkness.

THE flight above the jungle would have been awe-inspiring at another time. There were the stars above, nearer and brighter than those of Earth. There was no Milky Way in the firmament of this universe. The stars were separate and fewer in number. There was no moon. And below there was only utter, unrelieved darkness, from which now and again beast-sounds arose. They were clearly audible on board the silent air fleet. Roarings, bellowings, and hoarse screamings. Once the ships passed above a tumult as of unthinkable monsters in deadly battle, when for an instant the very clashing of monstrous jaws was audible and a hissing sound which seemed filled with deadly hate.

Then lights—few of them, and dim ones. Then blazing fires—Ragged Men, camped without the walls of Rahn or in some gold-walled courtyard where the jungle thrust greedy, invading green tentacles. The air fleet circled noiselessly in a huge batlike cloud. Then things came racing from the darkness, down below, and there was a tumult and a shouting, and presently the hilarious, insanely gleeful uproar of the Ragged Men. Tommy's face went gray. These were the escaped prisoners, arrived actually after the air fleet which was to demand the return of their captives.

Tommy wet his lips and spoke grimly to his pilot. There were six men and many Death-Mist bombs in his ship. He was asking if communication could be had with the other ships. It was wise to let Rahn know at once that avengers lurked overhead for the captives just delivered there.

For answer, a green signal-beam shot out. It wavered here and there. Tommy commanded again. And as the signal-beam flickered, he somehow sensed the obedience of the invisible ships about him. They were sweeping off to right and left. Bombs of the Death Mist were dropping in the darkness. Even in the starlight, Tommy could see great walls of pale vapor building themselves up above the jungle. And a sudden confused noise of yapping defiance and raging hatred came up from the city of Rahn. But before dawn came there was no other sign that their presence was known.

THE ornithopters came squeaking and rattling in their heavy flight just as the dull-red sun of this world peered above the horizon. The tree-fern fronds waved languidly in the morning breeze. The walls and towers of Rahn gleamed bright gold, in parts, and in parts they seemed dull and scabrous with some creeping fungus stuff, and on one side of the city the wall was overwhelmed by a triumphant tide of green. There the jungle had crawled over the ramparts and surged into the city. Three of the towers had their bases in the welter of growing things, and creepers had climbed incredibly and were still climbing to enter and then destroy the man-made structures.

But about the city there now reared a new rampart, rising above the tree-fern tops: there was a wall of the Death Mist encompassing the city. No living thing could enter or leave the city without passing through that cloud. And at Tommy's order it moved forward to the very encampments of the Ragged Men.

He spoke, beginning his ultimatum. But a movement below checked him. On a landing stage that was spotted with molds and lichens, women were being herded into clear view. They were the women of the Golden City. Tommy saw a tiny figure in khaki—Evelyn! Then there was a sudden uproar from an encampment of the Ragged Men. His eyes flicked there, and he saw the Ragged Men running into and out of the tall wall of Death Mist. And they laughed unroariously and ran into and out of the Mist again.

His pilot dived down. The Ragged Men yelled and capered and howled derisively at him. He saw that they removed masklike things from their faces in order to shout, and donned them again before running again into the Mist. At once he understood. The Ragged Men had gas masks!

Then, a sudden cracking noise. Three men had opened fire with rifles from below. Their garments were drab-colored, in contrast to the vivid tints of the clothing of the inhabitants of Rahn. They were Jacaro's gunmen. And a great freight carrier from Yugna veered suddenly, and a bluish flash burst out before it, and it began to flutter helplessly down into the city beneath.

The weapons of Tommy's fleet were useless, since the citizens of Rahn were protected by gas masks. And Tommy's fighting ships were subject to the same rifle fire against their propelling grids that had defeated the fleet from Rahn. The only thing the avenging fleet could now accomplish was the death of the women it could not save.

CHAPTER IX

War!

A HUGE ornithopter came heavily out on the landing stage in the city of Rahn. Its crew took their places. With a creaking and rattling noise it rose toward the invading fleet. From its filigree cockpit sides, men waved green branches. A green light wavered from the big plane that carried the bearded Council man and Denham. That plane swept forward and hovered above the ornithopter. The two flying things seemed almost fastened together, so closely did their pilots maintain that same speed and course. A snaky rope went coiling down into the lower ship's cockpit. A burly figure began to climb it hand over hand. A second figure followed. A third figure, in the drab clothing that distinguished Jacaro's men from all others, wrapped the rope about himself and was hauled up bodily. And Tommy had seen Jacaro but once, yet he was suddenly grimly convinced that this was Jacaro himself.

The two planes swept apart. The ornithopter descended toward the landing stage of Rahn. The freight plane swept toward the ship that carried Tommy. Again the snaky rope coiled down. And Tommy swung up the fifteen feet that alone separated the two soaring planes, and looked into the hard, amused eyes of Jacaro where he sat between two other emissaries of Rahn. One of them was half naked and savage, with the light of madness in his eyes. A Ragged Man. The other was lean and desperate, despite the colored tunic of a civilized man that he wore.

"HELLO," said Jacaro blandly. "We come up to talk things over."

Tommy gave him the briefest of nods. He looked at Denham—who was deathly white and grim—and the bearded Councilor.

"I' been givin' 'em the dope," said Jacaro easily. "We got the whip hand now. We got gas masks, we got guns just the same as you have, an' we got the women."

"You haven't ammunition," said Tommy evenly, "or damned little. Your men brought down one ship, and stopped. If you had enough shells, would you have stopped there?"

Jacaro grinned.

"You got arithmetic, Reames," he conceded. "That's so. But—I'm sayin' it again—we got the women. Your girl, for one! Now, how about throwin' in with me, you an' the professor?"

"No," said Tommy.

"In a coupla months, Rahn'll be runnin' this planet," said Jacaro blandly, "and I'm runnin' Rahn! I didn't know how easy the racket'd be, or I'd 've let Yugna alone. I'd 've come here first. Now get it! Rahn runnin' the planet, with a couple guys runnin' Rahn an' passin' down through a Tube any little thing we want, like a few million bucks in solid gold. An' Rahn an' the other cities for kinda country homes for us an' our friends. All the women we want, good liquor, an' a swell time!"

"Talk sense," said Tommy, without even contempt in his tone.

JACARO snarled.

"No sense actin' too big!" But the snarl encouraged Tommy, because it proved Jacaro less confident than he tried to seem. His next change of tone proved it. "Aw, hell!" he said placatingly. "This is what I'm figurin' on. These guys ain't used to fighting, but they got the stuff. They got gases that are hell-roarin'. They got ships can beat any we got back home. Figure out the racket. A coupla big Tubes, that'll let a ship—maybe folded—go through. A fleet of 'em floatin' over N'York, loaded with gas—that white stuff y' can steer wherever y' want it. Figure the shake-down. We could pull a hundred million from Chicago! We c'd take over the whole United States! Try that on y' piano! Me, King Jacaro, King of America!" His dark eyes flashed. "I'll give y' Canada or Mexico, whichever y' want. Name y' price, guy. A coupla months organizin' here, buildin' a big Tube, then. . . ."

Tommy's expression did not change.

"If it were that easy," he said drily, "you wouldn't be bargaining. I'm not altogether a fool, Jacaro. We want those women back. You want something we've got, and you want it badly. Cut out the oratory and tell me the real price for the return of the women, unharmed."

Jacaro burst into a flood of profanity.

"I'd rather Evelyn died from gas," said Tommy, "than as your filthy Ragged Men would kill her. And you know I mean it." He switched to the language of the cities to go on coldly: "If one woman is harmed, Rahn dies. We will shoot down every ship that rises from her stages. We will spray burning thermit through her streets. We will cover her towers with gas until her people starve in the gas masks they've made!"

The lean man in the tunic of Rahn snarled bitterly: "What matter? We starve now!"

Tommy turned upon him as Jacaro whirled and cursed him bitterly for the revealing outburst.

"We will ransom the women with food," said Tommy coldly—and then his eyes flamed, "and thrash you afterwards for fools!"

HE made a gesture to the Keeper of Foodstuffs. It was unconsciously an authoritative gesture, though the Keeper of Foodstuffs was in the state of affairs in Yugna the head of the Council. But that old man spoke deliberately. The man from Rahn snarled his reply. And Tommy turned aside as the bargaining went on. He could see Evelyn down below, a tiny speck of khaki amid the rainbow-colored robes of the other women. This had been a savage expedition, to rescue or to avenge. It had deteriorated into a bargain. Tommy heard, dully, amounts of unfamiliar weights and measures of foodstuffs he did not recognize. He heard the time and place of payment named: the gate of Yugna, the third dawn hence. He hardly looked up as at some signal one of their own ornithopters slid below and the three ambassadors of Rahn prepared to go over the side. But Jacaro snarled out of one corner of his mouth.

"These guys are takin' each other's words. Maybe that's all right, but I'm warnin' you, if there's any double-crossin'. . . ."

He was gone. The Keeper of Foodstuffs touched Tommy's shoulder.

"Our flier," he said slowly, "will make sure our women are as yet unharmed. We are to deliver the foods at our own city gate, and after the women have been returned. Rahn dares not keep them or harm them. We of Yugna keep our word. Even in Rahn they know it."

"But they won't keep theirs," said Tommy heavily. "Not with a man of Earth to lead them."

HE watched with his heart in his mouth as the ornithopter alighted near the assembled women of Yugna. As the three ambassadors climbed out, he could hear the faint murmur of voices. The men of Yugna, under truce, called across the landing stage to the women of their own city, and the women replied to them. Then the crew of the one grounded freighter arrived on the landing stage and the flapping flier rose slowly and rejoined the fleet. Its crew shouted a shamefaced reassurance to the flagship.

"I suppose," said Tommy bitterly, "we'd better go back—if you're sure the women are safe."

"I am sure," said the old man unhappily, "or I had not agreed to pay half the foodstuffs in Yugna for their return."

He withdrew into a troubled silence as the fleet swept far from triumphantly for him. Denham had not spoken at all, though his eyes had blazed savagely upon the men of Rahn. Now he spoke, dry-throatedly:

"Tommy—Evelyn—"

"She is all right so far," said Tommy bitterly. "She's to be ransomed by foodstuffs, paid at the gates of Yugna. And Jacaro bragged he's running Rahn—and they've got gas masks. We'd better be ready for trouble after the women are returned."

Denham nodded grimly. Tommy reached out and took one of the black tablets from the man beside him. He began to draw carefully, his eyes savage.

"What's that?"

"There's high-pressure steam in Yugna," said Tommy coldly. "I'm designing steam guns. Gravity feed of spherical projectiles. A jet of steam instead of gunpowder. They'll be low-velocity, but we can use big-calibre balls for shock effect, and with long barrels they ought to serve for a hundred yards or better. Smooth bore, of course."

Benham stirred. His lips were pinched.

"I'll design a gas mask," he said restlessly, "and Smithers and I, between us, will do what we can."

THE air fleet went on over the waving tree-fern jungle in an unvarying monotony of bitterness. Presently Tommy wearily explained his design to the bearded Councilor who, with the quick comprehension of mechanical design apparently instinctive in these folk, grasped it immediately. He selected three of the six-man crew and passed Tommy's drawings to them. While the jungle flowed beneath the fleet they studied the sketches, made other drawings, and showed them eagerly to Tommy. When the fleet soared down to the scattered landing stages, not only was the design understood but apparently plans for production had been made. It did not take the men of the Golden City long to respond.

Tommy flung himself savagely into the work he had taken upon himself. It did not occur to him to ask for authority. He knew what had to be done and he set to work to do it, commanding men and materials as if there could be no question of disobedience. As a matter of fact, he yielded impatiently to an order of the Council that he should present himself in the Council hall, and, since no questions were asked him, continued his organizing in the very presence of the Council, sending for information and giving orders in a low tone while the Council deliberated. A vote was taken by the voting machine. At its end, he was solemnly informed that, though not a native of Yugna, he was entrusted with the command of the defense forces of the city. His skill in arms—as evidenced by his defeat of the fleet of Rahn—and his ability in command—when he met the gas-mask defense of Rahn with a threat of starvation—moved the Council to that action. He accepted the command almost abstractedly, and hurried away to pick gun emplacements.

WITHIN four hours after the return of the fleet, the first steam gun was ready for trial. Smithers appeared, sweat-streaked and vastly calm, to announce that others could be turned out in quantity.

"These guys have got the stuff," he said steadily. "Instead o' castin' their stuff, they shoot it on a core in a melted spray. They ain't got steel, an' copper's scarce, but they got some alloys that are good an' tough. One's part tungsten or I'm crazy."

Tommy nodded.

"Turn out all the guns you can," he said. "I look for fighting."

"Yeah," said Smithers. "Miss Evelyn's still all right?"

"Up to three hours ago," said Tommy grimly. "Every three hours one of our ships lands in Rahn and reports. We give the Rahnians their stuff at our own city gates. I've warned Jacaro that we've mounted thermit-throwers on our food stores. If he manages to gas us by surprise, nevertheless our foodstuffs can't be captured. They've got to turn over Evelyn and cart off their food before they dare to fight, else they'll starve."

"But—uh—there're other cities they could stick up, ain't there?"

"We've warned them," said Tommy curtly. "They've got thermit-throwers mounted on their food supplies, too. And they're desperate enough to keep Rahn off. They're willing enough to let Yugna do the fighting, but they know what Rahn's winning will mean."

Smithers turned away, then turned back.

"Uh—Mr. Reames," he said heavily, "those fellas've gone near crazy about governors an' reducing valves an' such. They're inventin' ways to use 'em on machines I don't make head or tail of. We got three-four hundred men loose from machines already, an' they're turn-in' out these steam guns as soon as you check up. There'll be more loose by night. I had 'em spray some castin's for another Tube, too. Workin' like they do, an' with the tools they' got, they make speed."

Tommy responded impatiently: "There's no steel, no iron for magnets."

"I know," admitted Smithers. "I'm tryin' steam cylinders to—uh—energize the castin's, instead o' coils. It'll be ready by mornin'. I wish you'd look it over, Mr. Reames. If Miss Evelyn gets safe into the city, we could send her down the Tube to Earth until the fightin's over."

"I'll try to see it," said Tommy impatiently. "I'll try!"

HE turned back to the set-up steam gun. A flexible pipe from a heavily insulated cylinder ran to it. A hopper dropped metallic balls down into a bored-out barrel, where they were sucked into the blast of superheated steam from the storage cylinder. At a touch of the trigger a monstrous cloud of steam poured out. It was six feet from the gun muzzle before it condensed enough to be visible. Then a huge white cloud developed: but the metal pellets went on with deadly force. Half an inch in diameter, they carried seven hundred yards at extreme elevation. Point-blank range was seventy-five yards. They would kill at three hundred, and stun or disable beyond that. At a hundred yards they would tear through a man's body.

Tommy was promised a hundred of the weapons, with their boilers, in two days. He selected their emplacements. He directed that a disabling device be inserted, so if rushed they could not be turned against their owners. He inspected the gas masks being turned out by the women, who in this emergency worked like the men. Though helpless before machinery, it seemed, they could contrive a fabric device like a gas mask.

The second day the work went on more desperately still. But Smithers' work in releasing men was telling. There were fifteen hundred governors, or reducing valves, or automatic cut-outs in operation now. And fifteen hundred men were released from the machines, which had to be kept going to keep the city alive. With that many men, intelligent mechanics all, Tommy and Smithers worked wonders. Smithers drove them mercilessly, using profanity and mechanical drawings instead of speech. Denham withdrew twenty men and labored on top of one of the towers. Toward sunset of the second day, vast clouds of steam bellied out from it at odd, irregular intervals. Nothing else manifested itself. Those irregular belchings of steam continued until dark, but Tommy paid no attention to them. He was driving the gunners of the machine guns to practise. He was planning patrols, devising a reserve, mounting thermit-throwers, and arranging for the delivery of the promised ransom at the specified city gate. So far, there was no sign of anything unusual in Rahn. Messengers from Yugna saw the captive women regularly, once every three hours. The last to leave had reported them being loaded into great ground vehicles under a defending escort, to travel through the dark jungle roads to Yugna. A vast concourse of empty vehicles was trailing into the jungle after them, to bring back the food which would keep Rahn from starving, for a while. It all seemed wholly regular.

AT dawn, the remaining ships of the air fleet of Rahn were soaring silently above the jungle about the Golden City. They made no threat. They offered no affront. But they soared, and soared. . . .

A little after dawn, glitterings in the jungle announced the arrival of the convoy. Messengers, in advance, shouted the news. Men from Yugna went out to inspect. The atmosphere grew tense. The air fleet of Rahn drew closer.

Slowly, a great golden gateway yawned. Four ground vehicles rolled forward, and under escort of the Rahnians entered the city. Half the captive women from Yugna were within them. They alighted, weeping for joy, and were promptly whisked away. Evelyn was not among them. Tommy ground his teeth. An explanation came. When one half the promised ransom was paid, the others would be forthcoming.

Tommy gave grim orders. Half the foodstuffs were taken to the city gate—half, no more. At his direction, it was explained gently to the Rahnians that the rest of the ransom remained under guard of the thermit-throwers. It would not be exposed to capture until the last of the captives were released. There was argument, expostulation. The rest of the women appeared. Aten, at Tommy's express command, piled Evelyn and his own wife into a ground vehicle and came racing madly to the tower from which Tommy could see all the circuit of the city.

"You're all right?" asked Tommy. At Evelyn's speechless nod, he put his hand heavily on her shoulder. "I'm glad," he managed to say. "Put on that gas mask. Hell's going to pop in a minute."

He watched, every muscle tense. There was confusion about the city gate. Ground vehicles, loaded with foodstuffs, poured out of the gate and back toward the jungle. Other vehicles with improvised enlargements to their carrying platforms—making them into huge closed boxes—rolled up to the gate. The loaded vehicles rolled back and back and back, and ever more apparently empty ones crowded about the city gate waiting for admission.

Then there was a sudden flare of intolerable light. A wild yell arose. Clouds of steam shot up from the ready steam guns. But the circling air fleet turned as one ship and plunged for the city. The leaders began to drop smoking things that turned into monstrous pillars of prismatically-colored mist. A wave of deadly vapor rolled over the ramparts of the city. And then there was a long-continued ululation and the noise of battle. Ragged Men, hidden in the jungle, had swarmed upon the walls with ladders made of jungle reeds. They came over the parapet in a wave of howling madness. And they surged into the city, flinging gas bombs as they came.

CHAPTER X

The Fight

THE city was pandemonium. Tommy, looking down from his post of command, swore softly under his breath. The Death Mist was harmless to the defenders of Yugna as a gas, because of their gas masks. But it served as a screen. It blotted out the waves of attackers so the steam guns could not be aimed save at the shortest of short ranges. His precautions were taking effect, to be sure. Two thirds of the attackers were Ragged Men drawn from about half the surviving cities, and against such a horde Yugna could not have held out at all but for his preparations. Now the defenders took a heavy toll. Swarms of men came racing toward the open gate, their truncheons aglow in the sunlight. The ring of Death Mist was contracting as if to strangle the city, and it left the ramparts bare again. And from more than one point upon the battlements the roaring clouds of steam burst out again. A dozen guns concentrated on the racing men of Rahn, plunging from the jungle to enter by the gate. They were racing forward, without order but at top speed, to share in the fighting and loot. Then streams of metal balls tore into them. The front of the irregular column was wiped out utterly. Wide swathes were cut in the rest. The survivors ran wildly forward over a litter of dead and dying men. Electric-charge weapons sent crackling discharges among them. Their contorted figures reeled and fell or leaped convulsively to lie forever still where they struck. And then the steam guns turned about to fire into the rear of the men who had charged past them.

The steam guns had literally blasted away the line of Ragged Men where they stood. But the line went on, with great ragged gaps in it, to be sure, but still vastly outnumbering the defenders of the city. Here and there a steam gun was silent, its gun crew dead. And presently those that were left were useless, immobile upon the ramparts in the rear of the attack.

DOWN in the ways of the city the fight rose to a riotous clamor. At Tommy's order the women of the city had been concentrated into a few strong towers. The machines of the city were left undefended for a time. A few strong patrols of fighting men, strategically placed, flung themselves with irresistible force upon certain bands of maddened Ragged Men. But where a combat raged, there the Ragged Men swarmed howling. Their hatred impelled them to suicidal courage and to unspeakable atrocities. From his tower, Tommy saw a man of Yugna, evidently a prisoner. Four Ragged Men surounded him, literally tearing him to pieces like the maniacs they were. Then he saw dust spurting up in a swift-advancing line, and all four Ragged Men twitched and collapsed on top of their victim. A steam gun had done that. A fighting patrol of the men of Yugna swept fiercely down a paved way in one of the Golden City's vehicles. There was the glint of gold from it. A solid, choked mass of invaders rushed upon it. Without slackening speed, without a pause, the vehicle raced ahead. Intolerable flashes of light appeared. A thermit-thrower was mounted on the machine. It drove forward like a flaming meteor, and as electric-charge weapons flashed upon it men screamed and died. It tore into a vast cloud of the Death Mist and the unbearable flames of its weapon could only be seen as illuminations of that deadly vapor.

A part of the city was free of defenders, save the isolated steam gunners left behind upon the walls. Ragged Men, drunk with success, ran through its ways, slashing at the walls, battering at the light-panels, pounding upon the doorways of the towers. Tommy saw them hacking at the great doorway of a tower. It gave. They rushed within. Almost instantly thereafter the opening spouted them forth again and after them, leaping upon them, snapping and biting and striking out with monstrous paws and teeth, were green lizard-things like the one that had been killed—years back, it seemed—on Earth. A deadly combat began instantly. But when the last of the fighting creatures was down, no more than a dozen were left of the three score who had begun the fight.

BUT this was not the main battle. The main battle was hidden under the Death-Mist cloud, concentrated in a vast thick mass in the very center of the city. Tommy watched that grimly. Perhaps eight thousand men had assailed the city. Certainly two thousand of them were represented by the still or twitching forms in queer attitudes here and there, in single dots or groups. There were seven hundred corpses before the city gate alone, where the steam guns had mowed down a reinforcing column. And there were others scattered all about. The defenders had lost heavily enough, but Tommy's defense behind the line of the ramparts was soundly concentrated in strong points, equipped with steam guns and mostly armed with thermit-throwers as well. From the center of the city there came only a vast, unorganized tumult of battle and death.

Then a huge winged thing came soaring down past Tommy's tower. It landed with a crash on the roofs below, spilling its men like ants. Tommy strained his eyes. There was a billowing outburst of steam from the tower where Denham had been working the night before. A big flier burst into the weird bright flame of the thermit fluid. It fell, splitting apart as it dropped. Again the billowing steam. No result—but beyond the city walls showed a flash of thermit flame.

"Denham!" muttered Tommy. "He's got a steam cannon; he's shooting shells loaded with thermit! They smash when they hit. Good!"

He dispatched a man with orders, but a messenger was panting his way up as the runner left. He thrust a scribbled bit of paper into Tommy's hand.

> "I'm trying to bring down the ship that's controlling the Death Mist. I'll shell those devils in the middle of town as soon as our controls can handle the Mist.
>
> Denham."

Tommy began to snap out his commands. He raced downward toward the street. Men seemed to spring up like magic about him. A ship with one wing aflame was tottering in mid-air, and another was dropping like a plummet.

Then Tommy uttered a roar of pure joy. The huge globe of beautiful, deadly vapor was lifting! Its control-ship wa. shattered, and men of the Golden City had found its setting. The Mist rose swiftly in a single vast globule of varicolored reflections. And the situation in the center of the city was clear. Two towers were besieged. Dense masses of the invaders crowded about them, battering at them. Steam guns opened from their windows. Thermit-throwers shot out flashes of deadly fire.

Tommy led five hundred men in savage assault, cleaving the mass of invaders like a wedge. He cut off a hundred men and wiped them out, while a rear guard poured electric charges into the main body of the enemy. More men of Yugna came leaping from a dozen doorways and joined them. Tommy found Smithers by his side, powder-stained and sweat-streaked.

"MISS EVELYN'S all right?" Smithers asked in a great calm.

"She is," growled Tommy. "On the top floor of a tower, with a hundred men to guard her."

"You didn't look at the Tube I made," said Smithers impassively; "but I turned on the steam. Looks like it worked. It's ready to go through, anyways. It's the same place the other one was, down in that cellar. I'm tellin' you in case anything happens."

He opened fire with a magazine

rifle into the thick of the mob that assailed the two towers. Tommy left him with fifty men to block a highway and led his men again into the mass of mingled Ragged Men and Rahnians. His followers saw his tactics now. They split off a section of the mob and fell upon it ferociouly. There were sudden awful screams. Thermit flame was rising from two places in the very thick of the mob. It burst up from a third, and fourth, and fifth. . . . Denham, atop his tower, had the range with his steam cannon, and was flinging heavy shells into the attackers of the two central buildings. And then there was a roaring of steam and a ground vehicle came to a stop not fifty feet away. A gun crew of Yugnans had shifted their unwieldy weapon and its insulated steam boiler to a freight-carrying vehicle. Now the gunner pulled trigger and traversed his weapon into the thick of the massed invaders, while his companions worked desperately to keep the hopper full of projectiles.

The invaders melted away. Steam guns in the towers, thermit projectiles from the cannon far away; now this. . . . And the concealing cloud of Death Mist was rising still, headed straight up toward the zenith. It looked like a tiny, dwindling pearl.

THE assault upon Yugna had been a mad one, a frantic one. But the flight from Yugna was the flight of men trying to escape from hell. Wild panic characterized the fleeing men. They threw aside their weapons and ran with screams of terror no whit less horrible than their howls of triumph had been. And Tommy would have stopped the slaughter, but there was no way to send orders to the rampart gunners in time. As the fugitives swarmed toward the walls again, the storms of steam-propelled missiles mowed them down. Even those who scrambled down to the ground outside and fled sobbing for the jungle were pursued by hails of bullets. Of the eight thousand men who assailed Yugna, less than one in five escaped.

Pursuit was still in progress. Here and there, through the city, the sound of isolated combats still went on. Denham came down from his tower, looking rather sick as he saw the carnage about him. A strong escort brought Evelyn. Aten was grinning proudly, as though he had in person defeated the enemy. And as Evelyn shakingly put out her hand to touch Tommy's arm—it was only later that he realized he had been wounded in half a dozen minor ways—a shadow roared over their heads. The crackle of firearms came from it.

"Jacaro!" snarled Tommy. He leaped instinctively to pursue. But the flying thing was bound for a landing in an open square, the same one which not long since had seen the heaviest fighting. It alighted there and toppled askew on contact. Figures tumbled out of it, in torn and ragged garments fashioned in the style of the very best tailors of the Earth's underworld.

Men of Yugna raced to intercept them. Firearms spat and bellowed luridly. In a close-knit, flame-spitting group, the knot of men raced over fallen bodies and hurtled areas where the pavement had cooled to no more than a dull-red heat where a thermit shell had struck. One man, two, three men fell under the small-arms fire. The gangsters went racing on, firing desperately. They dived into a tunnel and disappeared.

"THE Tube!" roared Smithers. "They' goin' for the Tube!" He plunged forward, and Tommy seized his arm.

"They'll go through your Tube," he said curtly. "It looks like the one they came through. They'll think it is. Let 'em!"

Smithers tried to tear free.

"But they'll get back to Earth!" he raged. "They'll get off clear!"

The sharp, cracking sound of a gun-cotton explosion came out of the doorway into which Jacaro and his men had dived. Tommy smiled very grimly indeed.

"They've gone through," he said drily, "and they've blown up the Tube behind them. But—I didn't tell you—I took a look at your castings. Your pupils were putting them together, ready for the steam to go in, in place of the coils I used. But—er—Smithers! You'd discarded one pair of castings. They didn't satisfy you. Your pupils forgot that. They hooked them all together."

Smithers gulped.

"Instead of four right-angled bends," said Tommy grimly, "you have six connected together. You turned on the steam in a hurry, not noticing. And I don't know how many series of dimensions there are in this universe of ours. We know of two. There may be any number. But Jacaro and his men didn't go back to Earth. God only knows where they landed, or what it's like. Maybe somewhere a million miles in space. Nobody knows. The main thing is that Earth is safe now. The Death Mist has faded out of the picture."

He turned and smiled warmly at Evelyn. He was a rather horrible sight just then, though he did not know it. He was bloody and burned and wounded. He ignored all matters but success, however.

"I think," he said drily, "we have won the confidence of the Golden City, Evelyn, and that there'll be no more talk of gassing Earth. As soon as the Council meets again, we'll make sure. And then—well, I think we can devote a certain amount of time to our personal affairs. You are the first Earth-girl to be kissed in the Fifth Dimension. We'll have to see if you can't distinguish yourself further."

AGAIN the Council hall in the tower of government in the Golden City of Yugna. Again the queer benches about the black wood table—though two of the seats that had been occupied were now empty. Again the guards behind the chairs, and the crowd of watchers—visitors, citizens of Yugna attending the deliberations of the Council. The audience was a queer one, this time. There were bandages here and there. There were men who were wounded, broken, bent and crippled in the fighting. But a warmly welcoming murmur spread through the hall as Tommy came in, himself rather extensively patched. He was wearing the tunic and breeches of the Golden City, because his own clothes were hopelessly beyond repair. The bearded old Councilor gathered the eyes of his fellows. They rose. The Council seated itself as one man.

Quiet, placid formalities. The Keeper of Foodstuffs murmured that the ransom paid to Rahn had been recaptured after the fight. The Keeper of Rolls reported with savage satisfaction the number of enemies who had been slain in battle. He added that the loss to Yugna was less than one man to ten of the enemy. And he added with still greater emphasis that the shops being fitted with automatic controls had released now—it had grown so much—two thousand men from the necessary day-and-night working force, and further releases were to be expected. The demands of the machines were lessened already beyond the memory of man. Eyes turned to Tommy. There was an expectant pause for his reply.

"I HAVE been Commander of Defense Forces," he told them slowly, "in this fighting. I have given you weapons. My two friends have done more. The machines will need fewer and fewer attendants as the hints they have given you are developed by yourselves. And there is some hope that one of my friends may show you, in ultra-sonic vibrations, a weapon against the jungle itself. My own work is finished. But I ask again for friendship for my planet Earth. I ask that no war be made on my own people. I ask that what benefits you receive from us be passed to the other surviving cities on the same terms. And since there can be no further fighting on this scale, I give back my commission as Commander of Defense."

There was a little murmur among the men of Yugna, looking on. It rose to a protesting babble, to a shout of denial. The bearded old Keeper of Foodstuffs smiled.

"It is proposed that the appointment as Commander of Defense Forces be permanent," he said mildly.

He produced the queer black box and touched it in a certain fashion. He passed it to the next man, and the next and next. It went around the table. It passed a second time, but this time each man merely looked at the top.

"You command the defense forces of Yugna for always," said the bearded old man, gently. "Now give orders that your requests become laws."

TOMMY stared blankly. He was suddenly aware of Aten in the background, smiling triumphantly and very happily at him. There was something like a roar of approval from the men of Yugna, assembled.

"Just what," demanded Tommy, "does this mean?"

"For many years," said a hawk-faced man ungraciously, "we have had no Commander of Defense. We have had no wars. But we see it is needful. We have chosen you, with all agreeing. The Commander of Defense"—he sniffed a little, pugnaciously—"has the authority the ancient kings once owned."

Tommy leaned back in the curious benchlike chair, his eyes narrow and thoughtful. This would simplify matters. No danger of trouble to Earth. A free hand for Denham and Smithers to help these folk, and for Denham to learn scientific facts—in the sciences they had developed—which would be of inestimable value to Earth. And it could be possible to open a peaceful traffic with the nations of Earth without any danger of war. And maybe. . . .

He smiled suddenly. It widened almost into a grin.

"All right. I'll settle down here for a while. But—er—just how does one set about getting married here?"

Humans Are Electromagnetic Atoms

GREAT interest was aroused in scientific circles recently by the announcement that Prof. Guido Cremonese of the University of Rome has succeeded in photographing vital rays, including those emanating from the human body.

"The photography of vital rays," he said, "which I regard as one of the most important discoveries of the present century, fully confirms the hypothesis that life is an oscillatory electromagnetic phenomenon.

"This discovery is the missing

link without which it was hitherto impossible to understand fully and explain the mystery of life. Its effect will be of incalculable value because, having once ascertained that the nature of life is purely physical, the treatment of disease will have to be conducted on different lines, starting from the idea that disease is nothing but an alteration of the oscillatory state of equilibrium of the organism, both in the physical and in the psychic fields.

"The photograph of vital radiations had already been attempted with unsatisfactory results. In 1922, Gurwitsch discovered that rays emanating from the roots of onions were capable of inducing an increased cellular growth in other roots. Hence the name of 'Gurwitsch's mitogenetic radiations.'

"Numerous scientists have devoted themselves to this mysterious problem. Among the pioneers must be mentioned two Germans, Reiter and Gabor, who were able to confirm the existence of mitogenetic radiations, which are ultra-violet rays of a wave-length of 2,000 to 3,400 angstroms. The angstrom is equivalent to the ten-millionth part of a millimetre.

"They discovered that malignant tumors emit mitogenetic radiations, and that benignant tumors do not. After several vain attempts they came to the conclusion that it was impossible to photograph the mysterious rays.

"My method is extremely simple. I started experimenting on yeast with a photographic plate wrapped in tinfoil and placed in a black paper envelope to ascertain the strength of penetration of the rays.

"A small coin was placed in the middle of the plate. I found that whereas all the exposed surface of the plate had been impressed by the rays of the yeast, the part covered by the coin had not been penetrated.

"Vital radiations, taken together, fail to impress a photographic plate because some are antagonistic to the others. The success of my discovery is due to the fact that I adopt a special technique which enables me to split up the beam rays emanating from living beings or substances. From the photographs I have obtained it is evident that vital rays are much more complex than the German scientists believed.

"Another important result is that by means of these photographs I have been able to ascertain that human rays have characteristics nearly antithetic to those of vegetal radiations.

"It is probable that we shall soon be able to diagnose special pathological or hereditary conditions by the photographing of vital rays.

"Perhaps the most interesting photograph I have is one obtained by applying to my chest a panchromatic plate for about a month. Very clear images of radiations were perceptible.

"My discovery proves in a most conclusive manner that life is a purely physical phenomenon to be placed in the field of electromagnetism. This is of the greatest importance because it opens out new possibilities in physiology and pathology.

"If we admit that the real cause of disease is a lack of equilibrium between the internal rays of the body and the external ones, and that disease is not result of a pathogenous agent but of the state of the individual, it is obvious that the alterations of this wonderful oscillatory circuit, namely, disease, can only be cured by opportunely modifying the oscillatory rhythm, thus restoring equilibrium, or health."

The Science Forum

Conducted by Carlyle Elliott, B. A., B. S., Ph. D.

Telescopes

Q.—(a) What is the difference between reflector and refractor telescopes?

(b) What are the advantages of each kind?

(c) In view of the fact that the surface of the earth rotates at the speed of a thousand miles an hour, how is the aim of a telescope maintained?—H. E. Guerney.

A.—(a) These two classes of telescopes differ with respect to the objective system used. The refractor type utilizes a lens to catch the light from the astral body, while the reflector type employs a parabolic mirror to accomplish the same purpose. The objective of any telescope being the most critical part, as well as the most expensive to make, it is essential that this element be given primary consideration.

(b) It may be said in general that the modern trend is decidedly in favor of the reflector type for the following reasons:

In the mirror type the light need not pass through any glass in the objective as the silvered surface is plated on the glass, not behind it. Therefore imperfections in the glass are of no importance. In the refractor, two faces of the lens must be formed and polished.

A lens must be suspended by its edge only. This offers difficulties in support, and a large, heavy lens may actually sag from its own weight. The mirror, on the other hand, may obviously be embedded in a solid support.

Owing to an optical principle, light passing through a lens has a tendency to split into the spectral colors, as is observed in the case of a prism. This "chromatic aberration" causes a variegated halo about the object which is viewed. This troublesome effect is much exaggerated when the telescope is used for photographic purposes. The chromatic aberration in a single lens may be largely corrected by the use of two lenses in the objective system, each of a different type of glass, but then you have, of course, two more faces to form and polish, and the added weight of the extra lens.

The reflector telescope may be mounted in a much shorter tube with lighter supports and less counterbalance because in this type the objective is situated at the bottom of the tube.

(c) Telescopes have for their main axis a spindle which is parallel with the axis. The instrument is turned on this spindle in a direction which is the reverse of that of the Earth to keep the objective trained upon the heavenly body under observation. An electric motor, synchronized with a clock accomplishes this, though in lighter telescopes a power clock alone may be used.

The Blackness of Outer Space

Q.—Why is outer space always black? I don't see how anybody can be sure of its color when no one has penetrated beyond the stratosphere.—E. L. Crothers.

A.—Inasmuch as light rays are only appreciated as such when they are reflected from some object into the eye, it follows that in space, which is comparatively free from objects, all will be darkness. A beam of light entering a room through a hole in a shutter makes a visible spot on the floor and also illuminates particles of dust in its path. However, if neither dust nor floor were present the ray of light would be invisible and blackness would prevail.

Radio Wave-Energy

Q.—What fraction of the total electrical wave-energy radiated by the aerial of a broadcasting station is received by the radio tuned in to a broadcast?—F. H. Philips.

A.—Of course the energy at the receiving station is dependent upon the distance from the transmitter. The proportion can be figured out mathematically for any given set of conditions. Assuming that the energy is disseminated equally in all directions, it has been calculated that the energy received from a transmitter of fair power output, situated 1,000 miles distant, and during a program lasting one hour, would be less than that used by a fly walking one-quarter of an inch.

Plants and Animals

Q.—What is the essential difference between plants and animals; for instance, between a man and an oak tree, and an amoeba and one of the bacteria?—T. J. Jones.

A.—It is much easier to enumerate differences between a man and an oak tree than those between an amoeba and one of the bacteria, because in highly developed organisms the differences are much more numerous and apparent. The more rudimentary the organism, the more difficult it is to differentiate. One of the fundamental differences between a man and a tree is to be found in the vital processes of metabolism. Respiration in the higher animals consists in the taking in of oxygen and the exhalation of carbon dioxide. The reverse of this is true in the plants. When we consider lower forms such as the amoeba and bacteria we must depend upon arbitrary classification to a large extent.

Listed below are some of the characteristics of plants and animals which may serve as an aid to classification, though there are exceptions to all of them. Amoeba are quite definitely considered to be animals, but bacteria are regarded to be of too rudimentary a form of life to bear classification. Animals: sexual reproduction; motility; require complex foods. Plants: nourishment comes through the use of simple substances, such as carbon dioxide; have photo-synthetic properties, whereby the energy of the sun is absorbed and transformed into chemical energy; non-motility.

The Colors of Stars

Q.—Do stars really have different colors? Mars certainly looks reddish to me.—A. R. Standish.

A.—It is true that the planets reflect to our eye different rays from the sun. It is due to the composition of these bodies and to the atmospheres surrounding them. The stars, too, radiate differently colored light owing to the elements which occur in their makeup. It is from the spectral analysis of the light that scientists can judge their composition.

Radio-Activity

Q.—What is radio-activity? Doesn't it mean the property of giving off light in the dark?—H. P. Brewster.

A.—Radio-activity does not mean the giving off of visible days. Luminescence or phosphorescence better describes this phenomenon. It is true that certain radio-active bodies have the property of causing luminescence in other substances. Radium, for instance, itself is not visible in the dark, but the rays which it emits are capable of causing visible rays to radiate from certain other substances, notably zinc sulphide. This phenomenon is used in the production of paint for luminous watch dials. Radio-activity, then, is the property of throwing off invisible rays which have the power to penetrate substances which are opaque to visible light.

Differences

Q.—(a) What is the difference between chemistry and biochemistry?
(b) Between physics and astrophysics? —A. N. Webb.

A.—(a) Chemistry is the science which deals with the composition of matter in general, while biochemistry is that which deals with the composition of living matter.

(b) Physics is the science which deals with the properties of matter and the forces that govern it. Astrophysics is that branch of physics which deals more specifically with the properties of the astral bodies and the forces which govern them.

Hormones

Q.—(a) What are hormones?
(b) How are they connected with emotion?
(c) Is it true that anger increases the capacity of the blood to coagulate, in the event of a wound?—C. Kaplin.

A.—(a) Hormones are substances produced by the so-called "ductless glands" in the body, and are emptied in very small quantities directly into the blood. The hormones in this way gain access to other organs in the body, causing various effects.

(b) This may be answered by a discussion of adrenalin, the secretion of supra-renal glands. The emotion of fear causes activity in these glands and they pour the adrenalin into the blood. The results are quite complex, but some of them are very evident. The skin pales, due to the constriction of the capillaries —probably as a protection against excessive bleeding if wounds should occur; the heart is stimulated to more vigorous action through both the tonic effect of the adrenalin and the constriction of the capillaries; the blood pressure mounts; added strength is given to the muscles.

(c) Adrenalin has no effect directly upon the clotting time of the blood, but it will prevent loss of blood as mentioned above. In anger, the skin becomes red, which is an evidence that the blood is forced near the surface. Bleeding from the small blood vessels under this condition would be more profuse than usual and there is no reason to suppose that the blood is more coagulable.

Have You a Question?

Send it in on the blank provided

The Readers' Corner

A Meeting Place for Readers of Astounding Stories

Additions—Improvements

You'll already have seen (a safe bet!) the Science Forum and the Editorial, the two new science features we promised in our last issue, so it only remains for us to add, "We hope you like them."

But they are not all.

We have restored the name on our cover to the full "Astounding Stories of Super-Science." Did you notice?

We have given the opening of every story a double-page layout.

We have secured the services of the well-known Dr. Carlyle Elliott, B. A., B. S., Ph. D. (in science), for the conduct of our new Science Forum and as consultant on scientific matters. He brings to Astounding Stories a broad experience and splendid capacity; and from now on our stories will be checked more rigorously than ever for their scientific accuracy.

More yet. (When we go about improving, we do a thorough job!) We have placed at the end of this "Corner" a double-barreled coupon. It works both ways (your Editor's own super-scientific invention: unlike most coupons, you fill out *both* sides, thereby not having to tear out part of the text when you send it in!): on one side we invite you to send us your story gradings for the current issue, while on the other there is space for both a ballot and a question addressed to the Science Forum. The subject to be balloted will be changed with each issue. The present one is devoted to the timely evaluation of stories that appeared in the issues dated 1932. The next, perhaps, will give you an opportunity to vote on your favorite author—and, incidentally, provide *us* with that information, so we can keep him working for you. And so on.

Finally, hereafter, we are going to require our authors to put more science in most of the stories they write for you. We have come to feel—thanks to your suggestions as informal "associate editors"—that the greater number would be pleased if we departed a little from our established "action" story policy in the direction of one embodying more science. It will not be easy to get this new kind of story, for we will not allow anything to clog the flow, to retard the pace, to interfere in any noticeable way with the *story* values we have always given in our fiction; but we are working closely with our authors, and already it is apparent that we are soon going to be able to offer you a new and richer Science Fiction, superior in many ways to much that has been written in the past.

Send us your filled-in coupon if you will, but don't stop writing your lively letters. Most of us feel that the "Corner" is one of the finest features of the magazine, and we can't very well spare the gentle brickbats and cast-iron roses some of you have become so adept at throwing. And don't hesitate to use the Science Forum coupon every time there arises in your mind a question related to the science in our stories. Dr. Elliott will not be able to answer questions privately through the mail, but he will certainly make room in the "Forum" for all that are of general interest.

You approve these additions? Write in and tell us. And tell your friends. There must be thousands who are not Science Fiction fans only because they do not know that a magazine like Astounding Stories is being published.

—The Editor.

Rocket Falls Short

Dear Editor:

List me as a very enthusiastic reader of Astounding Stories, though there does seem to be too much adventure and not enough science in it. What I prefer is science, particularly that which concerns space flight.

I think that too much is expected of the rocket. It is impossible, as I see it, to develop the rocket to a point of efficiency suitable for long flights unless an efficient and practical process of regeneration is discovered and used, which would change the face of matters considerably. Electrical or gravitational attraction and the repulsion of the planets and even steam offer greater possibilities. I am very much interested in this subject, and hope to do much work in this field myself.—Richard Leibengood, Wauconda, Ill.

All Right, Authors

Dear Editor:

In a recent issue Mr. Feeney discusses the possibility of time travel. Has it ever been noted that if time is one of our dimensions, as has been, I believe, proven, and we have no way of measuring it except by the movement of the heavenly bodies, then we must be constantly traveling towards an unknown destination in time from an unknown starting point, but we can never find out our absolute speed in time any more than we can determine our absolute speed in space (the Lorenz-Fitzgerald ether-drift experiment)? But it seems to me that time is an attribute of size; the planetary system of the hydrogen atom has a relatively much faster progress in time than our system of planets. I believe that no molecule of any kind can ever proceed in time at any other rate than that at which it was formed from its constituent electrons and protons.

In reference to Mr. Feeney's cloth space suit: is it possible to make any combination of cloth and rubber to withstand a temperature difference on opposite sides of 293° C. (—273° + 20°)? Which brings up another question. How have the authors constructed their space ships to withstand the absolute density of absolute zero? Gilmore is the only author I have noticed who has been careful about taking his ships out of the atmosphere (the first Hawk Carse story).

Mr. Daniel asks, "How can an atom be inhabited if it is composed of one element?" According to my understanding of physical chemistry, including Mosely's and Bohr's work and theory, any element is only distinguished from another element by the number of planetary electrons normally pursuing an orbit about the proton, which number is dependent on the positive charge of the proton. Hence any, or, I should say, some planetary electrons in an atom may have the same proportion of various elements in its composition as our world, this element's being in turn formed from excessively small electrical charges.

One last thing and I'll quit. I should like to see a story written with a basic plot describing a world or planet on which the periodic system is moved up one step. This should be a good change of plot for some of your chemically inclined authors. I should be glad to elaborate, but would rather see someone else's ideas. I am interested in all kinds of physics, biology, chemistry and math. I get along fine with your magazine.—Robert C. Gallager, The Hollow, Va.

Kinda Likes A. S.

Dear Editor:

Astounding Stories—what a mag! Not too scientific, yet educational. The best of its kind.

"Hellhounds of the Cosmos" was a corker in the June issue. There was an unexpected twist in the end of the story —for once the hero did not come back safe and sound, get a big writeup, and retire to live happily ever after! There is too much of that in the ordinary mags.—David Liberman, 1777 East 8th St., Brooklyn, N. Y.

Cold, Sober, Time-Traveling

Dear Editor:

I have just finished the May issue of A. S., and, seeing a comment by Mr. Hermann on "The Seed of the Toc-Toc Birds," venture to point out another flaw in the story. It has now been practically proved that the atom consists of protons and electrons, the + and — units of electricity, respectively. The electron has recently been thought of as a "group-wave" in the "ether." Furthermore, Profs. Lanzmuir and Lewis in America think that the electrons surrounding the nucleus are stationary under the influence of some unknown forces. This forms the basis of Prof. Lanzmuir's "Octel Theory," and may be called the chemical view of the atom. Now it is clearly absurd to suppose any eye to exist in or on an electrical wave-group. Also, since the electron is the ultimate negative unit, how could it be broken up into + and — particles to build up the atoms necessary for the bodies of the birds and their appliances and materials?

Another point. In the current issue Mr. Raymond declares time-traveling to be impossible. Well, let him read this—honest, gospel truth. Recently there has been republished a remarkable book called "An Adventure," which recounts the experiences of two English women who in 1901, on the grounds of the Trianon, in Versailles, walked straight into the 18th Century.

"They were met by persons wearing the costumes of 1789, and were addressed by them, some of whom were visible to one lady, others to both. They saw woods which no longer exist; passed by a rustic bridge over a ravine down which ran a cascade, now gone; saw a man sitting by a garden kiosk which is not to be found, and were accosted by a footman who emerged from a door in the palace which, through the destruction of a staircase, has ceased to afford any exit for nearly two years." The women were Miss Moberly and the late Miss Fourdain who were successively principals of St. Hugh College, Oxford. Now what does Mr. Raymond think of the above, which is a cold sober fact? I would like to see a reply to the above evidence from Mr. Raymond and other critics of time-traveling.

The stories in the May issue are just great, especially "The Martian Cabal." Why not try to get another different time-traveling serial from Mr. Cummings?—C. Connolly, Droigneac, Clonturk Park, Upper Drumcondra, Dublin, Ireland.

Poor Grandpa

Dear Editor:

I read and enjoyed Mr. Feeney's interesting letter in the June issue, but wish to ask: Why pick on grandfather?

It seems that the only way to prove that time-travel is impossible is to cite a case of killing one's own grandfather. This incessant murdering of harmless ancestors must stop. Let's see some wide-awake fan make up some other method of disproving the theory.

For my part, I do not believe time-travel to be possible except during the span of one's own life. Thus you could travel back to your birth or forward to your death, growing younger, or older, as you progressed.

I was glad to see a picture by Marchioni.

Strange Tales is a fitting companion to A. S., and when it prints such stories as "Wolves of Darkness" and "Duel of the Sorcerers" it at once advances to the front rank.—Donald Allgeier, Mountain Grove, Mo.

The Slam of the Month

Dear Editor:

In the "Corner" you invite brickbats. Here follow a few:

Don't claim to be a Science Fiction magazine or charges are likely to be pressed that you are taking money under false pretenses. Call it pseudo Science Fiction. You're nothing but a cheap hybrid between a real Science Fiction mag and a love story mag.

Most of your plots are impossible. (I mean that both ways.) The beautiful heroine, the manly, brave hero, and the scowling villain. Why don't you say, when each of these characters is introduced, "Enter the villain" or something of the sort? As it is, it's hard to distinguish them[?]. Why is it that in real life the brave, wonderful hero doesn't beat the villain in more than 50% of the cases?

Time-travel, fourth-dimensional and intra-atomic stories are scientifically impossible; viz., infinitely improbable.

The hero starts his time-machine July, 1932. He sets it to travel to July, 1,932,000. At the present time, the solar system is traveling through space at a certain velocity in the direction of a certain star. Since the machine is in the solar system, it has this velocity. Therefore, in a million years it will be at a certain definite point in the universe. The solar system also will be at a point in the vicinity, but not quite as far, since the gravitational drag of celestial bodies will somewhat retard its motion. The machine's velocity is not decreased because the celestial drag is a finite force, and the time for the trip between 1930 and 1,930,000 is infinitesimal; therefore, since a finite force cannot produce a finite effect in infinitesimal time the machine is not decelerated. If you desire better proofs, I've got them.

In your fourth-dimensional stories you grant us humans three dimensions and some other creatures another. Four minus three equals one, I think. Something seems ancient in Denmark when our authors try to give them three dimensional bodies. You mean, usually, sixth-dimensional stories, ja?

We always have the fellow who invents a super-microscope, looks at an atom, finds its planets inhabited, and establishes contact with its people. But listen: we can get one grain of sand

and divide it up and get one molecule of sand, but we can't have any less. We have to have some light to see that electron by. All right: we'll take one quantum and focus it on the electron. But, lo and behold, that one quantum of light knocks the electron clear out of its orbit as soon as it is touched. So how can we see it? This happens with any ether wave, no matter what its frequency.

I read Science Fiction for its science and to stimulate the imagination. For instance, "Out Around Rigel" gave me a clearer conception of space than any other story I have read so far. By the way, that was the only good story I have ever read in A. S.

If any readers are dissatisfied with my explanations of why certain science plots are impossible, I will be glad to prove it more thoroughly—and more technically. —Bernard Veatch, Box 23, Millette, S. Dak.

And That's the Truth

Dear Editor:

When I heard that Astounding Stories was to become a bi-monthly and Strange Tales a quarterly, I was so surprised and angered I could hardly speak.

This depression is going too ——— [Censored.—Ed.] far when it starts to hit Science Fiction.—Jack Darrow, 4224 N. Sawyer Ave., Chicago, Ill.

? ? ?

Dear Editor:

I am in America some many years now, and maybe soon at last I accomplish learning of "our" language like active writers to "The Readers' Corner" can talk.

There was no such magazine publication periodical of fantasy like Astounding Stories where I come from. I think maybe I go back soon.—Olaf von Klitzigg, San Francisco, Cal.

O Tempora!

Dear Editor:

So, you've changed good old Astounding Stories to a bi-monthly! And, worse still, you've changed Strange Tales—Strange Tales which was becoming my favorite Clayton mag, next to Astounding—to a quarterly. Just four issues a year, Mr. Editor, just four! How can you expect us readers to wait that long between issues? Well, anyway, it can never be said that the Clayton publications never gave its readers a quarterly!

Honestly, I'm taken aback! Heartbroken at the turn of affairs. What, I ask, am I going to read between issues, Mr. Editor? Why, I can hardly grasp the significance of the fact, except that something will be missing in my life. Just as if an old friend from whom I had been accustomed to getting letters regularly should suddenly stop corresponding.

However, your June issue was wonderful, and if the other issues are as good, far between though they may be, I suppose I'll have to make the best of it.—Carl Johnson, Jr., 129 Campbell St., Danville, Va.

Hails from Texas

Dear Editor:

I hail from Texas and am proud to be able to reveal the truthful fact that I am a loyal and satisfied reader of A. S.

Being interested in the unusual, I naturally respond to "our" magazine and its entire contents.

Please print this letter in the "Corner," as it will make me even more earnest in my idea of A. S.—J. D. Shumake, Rt. 4, Yoakum, Tex.

Hold Him, Cliff, Hold Him!

Dear Editor:

I have been an ardent reader of Astounding Stories ever since the first issue. My favorite authors are: Edmond Hamilton, Chas. W. Diffin, Arthur J. Burks, Anthony Gilmore, Ray Cummings, Capt. Meek, Victor Rousseau, Murray Leinster and many others.

The Hawk Carse and Dr. Bird tales are big hits with me. Jack Darrow and I discuss the stories in each issue very carefully until we agree which story is the best one and name the rest in order of merit. Diffin's new serial is grand.

I am very sorry that Astounding Stories has become a bi-monthly. You should have seen (and heard) Jack when he received the news. Man, oh, man, was there a rumpus! But I finally calmed him down.—Clifford Kornoelje, 4224 N. Sawyer Ave., Chicago, Ill.

Hail, P. A. Turner

Dear Editor:

Editor's mad, and I am glad
And I know what will tease him!
A coupla brickbats, right under his hat—
Yes, that will make him madder.

(Referring, of course, to comments made with regard to Louis Hogenmiller's letter.) [The verse doesn't rime, but we'll print it because of its exalted sentiment.—Ed.]

I don't see how Hogenmiller can be such an old crab and still be so forward in his letters. He's ——— [Censored.—Ed.]. I agree with the Ed. and I'll be his standby.

In one way I agree with Hogenmiller. "The cover's grown too poor to condemn it more." I can hardly make out a detail in Wesso's machinery.

Hail, Mr. Curtiss—William Palmer thinks something is impossible! (Tish, tish.)

Say, Mr. Editor, Carlyle J. Bessette disagrees with time-machines. Me, too. But—if you could travel in time and be an onlooker rather than a participant you could see everything in the other times but not participate, and consequently not change history. Time-traveling stories are all right as stories, but not as Science Fiction. The impossibility (Hail Sidney Curtiss!) of participating is too evident.

Mr. Bessette, I'll eat two million time-machines.

Hail Tom Daniel and Wesso! I have two booklets entitled "How to Draw in 26 Lessons." There seems to be a lot of artists writing this month, and yet they all disagree. Charles M. Tompkins has studied under several good teachers. Haven't you ——— [Censored.—Ed.] Charlie? Tish, Tish.

With reference to Henry Lewis' letter, let's have our authors argue with us humble "Corner" writers. What about a letter by Wesso in reply to our many brickbats? I direct this especially to Wesso in hopes that he will do it.

And now, Mr. Editor, I'm gonna sing you a song for days on end, a song entitled, "We want a quarterly!" (Even if you did publish one I probably couldn't get it in this hick town. But I'll sing that song until I get one.)

By the way, Ed., we fellows threw an egg in a pond and every time it floated inshore we threw it out again. After about a month I took it out and broke it. Now, there might have been a slip with "Loot of the Void," by Edwin K. Sloat, but nevertheless it sure was like that egg. However, I still believe that Edwin K. Sloat is your best author, excepting Paul Ernst. The story was one that has its strong and weak spots, but the weak spots were so abundant it wasn't in the least safe.

I would appreciate corresponding with other Science Fiction fans.

Yours till time-machines give milk.—Philip A. Turner, Hiram, O.

Authors, Note

Dear Editor:

Here's how to get a bargain!

Two days before I expected it on the stand, I saw the September issue of Astounding Stories hanging on display at a newsstand. Always on hand to grab my copy before it was sold out, I asked the newsdealer for it and tendered a five dollar bill. After searching through his pockets he confessed he hadn't the change. I dug into my pockets for change and found exactly 19c. I got the magazine for it, too.

I've been a reader of the Clayton Magazines for several years. Every time you issue a new one, I'm there to try it. Hence I have complete files of most of them.

Space ships and ray pistols are getting to be so common that I think you ought to get after the authors and make them get out of the rut they're in. A couple of thousand years from now when all these "sick men's dreams" are to materialize there'll be Science Fiction authors looking still farther into the future. Tell your authors to see if they can't put themselves into the shoes of these future Science Fiction writers.

Here's something for your authors to work on: In the year 9876, the moon threatens to shoot out of its orbit around the earth with its colonies of humanity, and go romping out into space. Have some Texan in San Antonio find a lariat among the antiques handed down from the Twentieth Century, practice its use, and of course master it before the moon gets away; then on a Pegasus (old horses bred to have wings) fly to the upper part of the atmosphere and lasso the moon, tie it to his saddle horn and drag it down. [Shame on you, Authors, for never having thought of that! —Ed.]

That's what's the matter with your magazine. No Ellis Parker Butlers, Mark Twains, or even G. B. Shaws. Say, why don't you get Nafziger out of Ace-High and put him on Science Fiction work? How about, from lack of space, cattle ranches on Mars? What's happened to the sports in the coming future? Is ping-pong as popular on Mars or Venus as it is here? How about checkers? Do they still play it the same way or do they play it left-handed? Where're our newspapers going? And the September, 9876, issue of Astounding Stories?—Elio F. Platti, 335 E. 148th St., New York City.

"At the Peak"

Dear Editor:

I have read your magazine from the start, and it has continually improved, till it is at the peak of its career. Please see that it remains so.

The covers are very attractive and beautiful, and are worthy of adorning the front of such an illustrious magazine. We readers clamoring for a quarterly are hungry for more Science Fiction. Could you not arrange to put out a sort of reprint quarterly in which is printed all the popular Science Fiction which some of us may not have read?

Yours for continual success, q. s. m. b. —Henry Unynowicz, 415 Henderson St., Jersey City, N. J.

And a Very Fine Word

Dear Editor:

I have been reading Science Fiction since 1927, and I think A. S. ranks among the best. The September issue was supercalifadualistic (very fine).

On the old and stiff-jointed subject of artists and drawings, Wesso uses a different type of drawing material from Paul, making his drawings appear of another sort, but they equally deserve credit for their works.

I have also read Strange Tales since it first appeared, and have enjoyed every issue so far.—Howard Breeman, 301—19th Ave., Paterson, N. J.

From Our Old Friend Jack

Dear Editor:

I had to wait two months for the September issue of Astounding Stories, but it was worth waiting for. It is one of the best numbers you have yet published.

"Slaves of Mercury," by Nat Schachner, was the best story. Mr. Schachner has proved time and again that he is a master at scientific adventure stories.

"Two Thousand Miles Below" becomes more interesting than ever. I hate to think that I will have to wait until the next issue to finish it.

I was not disappointed in "Raiders of the Universe," by Donald Wandrei. I hope he will write often for Astounding Stories.

"Loot of the Void" came next in order of merit. It was interesting and well told.

I also enjoyed "Disowned."

Wesso's cover for September was well done. I like the background of scientific apparatus. All the drawings, except the one for the serial, were good.—Jack Darrow, 4224 N. Sawyer Ave., Chicago, Ill.

This and That

Dear Editor:

I have been reading Astounding Stories for a long time, almost since its inception, in fact, and it is with genuine regret that I learned of your new policy with regard to abandoning the regular monthly issue.

In this September sisue, the story which ranks first in my estimation is "The Slaves of Mercury," by Nat Schachner. I don't think I ever read anything of his before. He's new here, isn't he? But for pure, dramatic action with something hair-raising every minute, combined with scientific plausibility and a slight romantic element, my vote goes to him for the best story in this issue. Such incidents as this story portrays may be actual fact some time. Interplanetary travel will be possible in the near future. There is little in these scientific imaginings which cannot or will not be actually duplicated in the laboratory. While knowledge of radio and electricity are far from profound today, new discoveries are made constantly, so that at least some of the things accepted as "wonderful" or "astounding" now will be everyday occurrences within ten years.

However, there is one pet peeve I can't get over; that is, time-travel. No on can travel forward or backward in time. It isn't possible to travel backward into space, time, or what have you, and meet one's long-dead ancestors and friends, living. Nor is it possible to go forward in time and meet people whose ancestors, even, are yet unborn. [We should say *not!*—Ed.] I believe that it will be possible, mechanically, at some time, to communicate with the spirits of the departed, but this other—I can't see it!

Personally, I would rather have stories about things which have been more or less accomplished in a laboratory. I especially like stories of invasions of the earth by creatures of other planets, but I don't like stories in which fights with whole universes are involved. The action is always a little hard to follow; also keeping tabs on the characters involved.

I don't pay much attention to the covers of the magazine; I'm more interested in the inside. I don't care whether its edges are gold plated. One forgets that he is holding a magazine while dashing about the universe in company with an earth man and his lady friend, who are fighting desperately to save the good old world from the dastardly plotting of some Martian, Mercurian or whoever happens to be in the scrap.

I am a writer, myself, with a couple of recent stories tentatively accepted for publication, besides quite a lot of newspaper features. I'll be glad to answer anyone who cares to write me. It may not be prompt, for I'm busy, usually, but I'll answer.—Guy Detrick, Box 2, Big Prairie, Ohio.

A New Death Ray

Dear Editor-in-Grief:

I say editor-in-grief because I suppose you have a headache all the time from having bricks bounced off your head, and trying to fill all the suggestions made by your readers.

A. S. is the best mag on the newsstands! Of all the Science Fiction magazines I read, A. S. has them all beat! (Now ain't that somethin'?)

I'll admit, though, that you could improve the ol' mag by issuing a quarterly and having a page of science questions and answers.

"Where are our reprints?" What a dizzy question that is! We don't want reprints. If anyone wants to read a story again, let him get out the old issue and read it till his heart is content!

The so-called "impossible stuff" is not so far-fetched at that. Just lately there was developed a way by which an ordinary radio oscillator can be made to give off sound waves of 300,000 cycles. When a frog was laid on it it was instantly killed. It turned glass into powder, and set wood on fire. No method of projecting these sound waves has been devised yet, but they think that they have discovered the real death ray. So, you see, the "impossible rays" may just be a matter of a few months or years until they are perfected.

I have a question that perhaps your readers will answer. Two observers, A and B, are on the earth's equator and on opposite sides of the earth from each other.

A is observing sunrise. B is observing sunset. A, with the aid of precision instruments, measures the velocity of the light that passes him. B does likewise. Later A and B compare figures and find them identical. Now to my reasoning I think that there would be a difference of about 2,000 miles per hour. [You are right; A and B are wrong.—Ed.]

I have been reading A. S. for a year now, and hope to read it for a good many years to come. My hobby is astronomy.

I forgot something. Wesso made a mistake in his drawing of "Disowned." The *body* of Tristan was the only object magnetized. Since that is true, his clothes would hang downward, also the curtains. Am I right? [Apparently the author forgot to mention it: the upper edges of the curtains, Tristan's clothing, etc., were equipped with small balloons containing helium.—Ed.]—Wallace Grube, Jr., 801 St. Clair St., Latrobe, Pa.

? ? ?

Dear Editor:

I like Astounding Stories and I read it with my eyes popping out until you could hang the brown derby on them. But your authors make me sick: let them give us a hero or two who doesn't have a few space ships, flying ships, a raft of gold bars or millions in credit to back him up, but has to go to it with his bare hands and the clothes he stands in—that's the way *we* have to do things, and your heroes are not entitled to more. We would then see how their comical code of ethics would work. To beat the world with one's only weapons, one's wits—if any—means that they must fight with the world's weapons of craft and deceit.

Also, please leave out the beautiful heroine—the darn women are a nuisance. And if the stories are to be true to life, let your heroes be human and drop the comic code of ethics to which humans give only lip service, anyway. Let them act like humans.

My grandfather was half human and lived to be over 300; his legs failed him, of course, in his old age. He could tell you all about humans and their code of ethics. You know that all half-breeds lose the power of levitating young, and to us it is only a story now, but I am sure Earth people could learn it if they weren't so darn materialistic. —J. Z. Julc, Syracuse, N. Y.

Announcement

Dear Editor:

The International Scientific Association announces the formation of the first important project of its new Five Year Plan, the Jules Verne Prize for Science Fiction.

You readers who want to improve Science Fiction, who want to see it recognized as good literature, and who want to aid in a worthwhile attempt to gain that goal, join the Jules Verne Prize Club. The dues are 25c.

Briefly, the purpose of the club is this: To select the three best stories of the year published in the stf. magazines through monthly voting by the members. A committee selected by the members will determine the first, second and third best at the end of 1933, and the funds of the club will be used to purchase suitable cups for the winners.

The club is a non-profit-making organization and all funds will be used to determine the winning stories and purchase the cups.

Dues for the International Scientific Association members have been reduced to $1.00. Apply for membership to Aubrey MacDermott, 2745—26th Ave., Oakland, Calif. The Cosmology, the club paper, is now being printed, a great improvement over the former mimeographed papers, and has become a quarterly. Sample copies may be had for 10c.

Send your quarters to: The Jules Verne Prize Club, c/o Raymond A. Palmer, Pub. Mgr., 3143 N. 34th St., Milwaukee, Wisc., and receive your receipts, your instructions as to voting and your admission to membership.

Help make Science Fiction depression-proof. Satisfy that urge to express your thanks to Jules Verne, the father of Science Fiction. What he has begun, let us not hesitate to carry on.—Raymond A. Palmer, 3143 N. 34th St., Milwaukee, Wisc.

A List

Dear Editor:

First of all I would like to name for our Ed's benefit a list of the finest stories that have appeared in the last ten issues: "The God in the Box," "Hawk Carse," "Out Around Rigel," "The Space Rover," "The Finding of Haldgren," "Vulcan's Workshop" and "Raiders of the Universes."

Many are the readers who would be overjoyed if you placed more stories written by the authors of the foregoing list of stories in "our" mag. The Commander Hanson narratives are marvelous, so let's have more of them.

My age is 15, and I will be delighted to correspond with any person interested in Science Fiction or astronomy, which is my hobby or avocation.—George Baskin, 2909—10th Ave., So., Minneapolis, Minn.

Curses à la Verses

Dear Editor:

A few months ago you kindly printed a list of gradings offered by us in the "Corner." Just a few days ago we read the comments of one of our fellow readers to the effect that a certain statement of ours showed that we did not understand the principles of physics. That's a laugh! We both majored in that subject just a few years ago, and I trust we have at least remembered what we were taught this long. Therefore, may we offer the following?

In Vindication

Everyone is human, and we all have made mistakes,
But for downright, vicious slamming, you birds sure take the cakes.
We made a list of stories once—and here there is a rub—
Opinions, roses, brickbats, and even fist and club
Have smacked us (poor unfortunates) right square between the eyes,
Till we, athirst for vengeance upon these blank-blank guys,
Have chosen of two courses: fight back or apologize.
We are the two who started this; even we, of course, maintain,
Opinions may be errors; no one's a perfect brain.
But till the time you prove to us that we are wrong as blazes,
May we sweetly inquire how you'd like going places?
About the tale, "An Extra Man," is centered all this storm:
It has its humor and all that; but still, in terms quite warm,
We'd like to know just how to make one equal two!
In preliminary experiments Drayle caused a drinking glass
To be transported fifty feet without a change in mass;
However, that was only one; it did not become twins as Harry Farrel later did.
And now for just two pins, we're asking you to find a place that shows
The elements the author used to create his heroes.
If he has used the earth's good dust, we realize we lose;
But if he used just what he took from the original,
He cannot have a pair of men who are alike and equal
To what the subject was before he entered that machine.
If you can make one equal two, you sure have a great bean—
For we have tried in algebra, and even that has failed!
We guess the secret has to lie, unless you guys (we quail!)
Are sharers in the knowledge of the master-mind called Drayle.

And having said our say in the lilting lines above—and having advanced our reasons for saying what we did—we retire gracefully (?) from the field of battle to let the rest of the readers catch up on their breathing. O. K., Mr. Bates!—Eugene Benefiel and George Skora, Hotel Vista del Arroyo, Pasadena, Cal.

No Comment

Dear Editor:

Astounding Stories is one of the least interesting and most "sensational" magazines I have ever read. The September, 1932, issue is a slight improvment, mainly because of Donald Wandrei. However, so infrequently do good authors write for you that I can frankly say you're terrible. Clifford Simak's story is about the most original story you have published. During your first six issues you would pass in the dark, but now you care nothing for quality, but desire quantity—of robots, rays, bewhiskered villains, heroes dragged through countless adventures, and the like. And for heaven's sake, drown Marchioni. Paul is the only artist of any merit. Wesso is good occasionally.

Can't you dispose of the conventional ending:

> ". . . the ——— menace was gone forever. As they faced the sunset he put his arm around her, their eyes met. 'My hero!' she exclaimed. They clinched."

As you pay the highest rates among the fantastic magazines, you should have the best. But no, the drivel you publish is unspeakable. I speak mainly of the mercenary authors who use the same characters over and over and over. Raise the magazine from the cheap class in which it is. Stop publishing the same plots endless times.

This will not be published, as you, contrary to your claims, print only complimentary letters. The few slams that get through are carefully censored with senile wit added by yourself. However, I at least express my opinion.—R. H. Barlow, Box 2383, Ft. Benning, Ga.

S. O. S.

Dear Editor:

I feel it is time the boys and I congratulated you on the success of your magazine. I buy Astounding Stories and Five Novels each month; and, although on our little old island we can't get them until most everybody in America has read them, just the same they are new to us and I can say they are the best magazines we have read (Pukka).

I would appreciate it very much if some of the fans of A. S. would correspond with me. I get very lonesome at times and a few letters would help to cheer me up.—H. Lames, C Company, 2nd Batt., East Surrey Regt., Cattinch Camp, Yorkshire, Eng.

Knockers, Note

Dear Editor:

This letter is in the form of a brickbat, regular Irish confetti, and the reason for my pugilistic attitude is the fact that A. S. is going bi-monthly for awhile. Now I shall have to keep my September copy and read it again next month.

I have been a reader of A. S. for more than a year and read "our" mag from cover to cover each month, and grow more enthusiastic each month.

Diffin's "The Finding of Haldgren" is the best story I have ever read, but all of the stories are good. Keep up the good work and refer all knockers to me, with their complaints about what's wrong with the drawing of space ships and such.—Jessie Dean Rago, 1709 Montana, El Paso, Texas.

Criticizer Criticized

Dear Editor:

I've been reading A. S. for a whole year, but this is the first time I'm taking time out to write. One of the chief causes was a letter I saw in the "Corner" written by Mr. Hogenmiller. I was perfectly content to sit and read the numerous comments of my fellow readers, but when it reaches the point where a criticizer of criticizers makes certain remarks as to the maturity of said criticizers' brains, I had to drop ye good old mag and pick up my scribbling equipment to say my say. If this person of the mature brain does not like to read the stories for the thrill of it, I might suggest a scientific library.

As to improvements, there need not be any. I always thought a mag was for reading and not for decorations. As for stories, give me more like "Hawk Carse," "Wandl the Invader," "The Red Hell of Jupiter" and "Loot of the Void."

That about finishes it all, except for one more thing: No quarterly—it is entirely useless. G'-by—see you in Mars—Edward Uzemock, 4547 S. Hermitage Ave., Chicago, Ill.

Well, Well, Well!

Dear Editor:

Here's something I thought might be suitable for the "Corner":

VERSE

In all this land of the free,
I wonder what's the bright idea!
Astounding Stories was a monthly
Now I see we'll receive six issues a year.
This is what I want to know—
When times are better, will you go
And send twelve issues a year again our way?
If you will, I'll say Okay!
Now I don't mean to up and kick,
For I'm not that sort of hick,
So just to please Your Highness' sake*(?)*
I'll grease your pride and omit the rake.
The June cover was mighty keen;
I liked quite well Wesso's shade of green;
But the September cover—oh, look—
The creature's different than inside the book! [?—Ed.].
Hurrah! Wright came back with "Priestess of the Flame!"
A story's always good when it has the (right) Wright name.
Then give us another story that has the hop
That's contained in "Vulcan's Workshop."
One mighty good story that got my goat
Was "Loot of the Void," by Edwin K. Sloat:
How could the spider's human paralyzed meat
Exist so darn long with nothing to eat?
Another story suited me to a "t"
Was an Earth story entitled "Slaves of Mercury!"—
Well, this is enough of my hullabuloo
So I'll sign off and give a kind adieu.

COMET HEAD DRACE

"Comet Head" Drace was a very tough case,
He led the cops of two planets a chase;
He had a wise head and often made bold
To plunder space ships in space's clear cold.
Bloody Game was the name that his ship sported free!
And he flew—this you knew—
From Earth to Mercury.
When he took his ship, he flew alone,

While other men swore his heart was of stone;
But he brewed his downfall as ruler of space
When he killed a girl of his own Earthman race.
Though bold, his feet grew cold,
And into space he flew;
But in the sky, on the fly,
Came the girl's lover true.
Bloody Game blazed a zigzag trail,
Still vengeance clung upon his tail;
Comet Drace grew sore and turned to fight,
To show the lover his ruling might.
With a zip and a flip
The pursuer dodged the flame—
Whizzed as it missed
The rocket ship's frame.
Drace cursed as he missed the pursuing enemy
And gritted his teeth as the last ray shot free.
Again he missed, the ship came on safe and sound;
Tho they must crash, it still held its ground. [?—Ed.]
The rocket ships met and with space friction het,
Fell like arrows through space!
A lover so bold, now lies very cold,
As does the body of Comet Head Drace.

How does the bunch like my poetry? —Henry Lewis, Jr., La Roche, So. Dak.

Been Missing Something

Dear Editor:

This week, quite by chance, I bought a copy of A. S. I have always been a lover of scientific and interplanetary fiction, and I was instantly attracted by the cover and title.

A. S. interested me from the cover to the last page. Such a type of magazine is not published in England; at least I have never seen one in London. It is quite apart from the usual run of blood and thunder books, and I was very interested in the correspondence pages, from which I gathered that I have been missing something for the last two years.

I should very much like to correspond with male and female readers of A. S., aged about fifteen or sixteen years, preferably interested in physical culture and sport.—William F. Archer, 48 Rollins St., Old Kent Road, London, S. E. 15, England.

Never a Sissy!

Dear Editor:

Just got my September issue of Astounding Stories. What a cover! Those critics in the 'Corner' that gave Wesso the razzberry may change their minds now. I can't see why Wesso's covers ever get any disapproval. But, do you know what the man reminds me of—I mean the man in the picture? Well, he reminds me of a sissy, with that red suit on.

The first story I ever read in A. S. was "Monsters of Mars." At that time I thought it was a pretty good yarn, but when I became used to Science Fiction it seemed that it was pretty rotten. The best story I ever read in A. S. was "Two Thousand Miles Below."

The Reader's Ballot

My favorite stories for the year 1932 were, in the following order:

1 ....

2 ....

3 ....

4 ....

5 ....

Name..

Address...

My question for The Science Forum is:

....

....

[Be sure and fill out the Story Preference Coupon on the other side—yes?]

Gee, I'm just dying to see what happens to Rawson and Smithy next.

Strange Tales is sure a swell mag. I've read every issue so far. It can't be beat!

Well, I want to get back to my A. S. mag. More power to you!—Ted Lutwin, 199 Warren St., Jersey City, N. J.

Announcement

Dear Editor:

When writing to Clifton Amsbury, Secretary, for membership in the International Scientific Association, please give address and what sciences you are interested in. His address is University of Nebraska, Dept. of Anthropology.—A. M. MacDermott, Treasurer, I. S. A.; President E. S. A., 245—26th Ave., Oakland, Cal.

Yessir

Dear Editor:

It was not very long ago since I wrote to you for the first time, but I feel I must "come over" again and congratulate you on the September issue.

The best story was undoubtedly "Raiders of the Universe." It is that particular kind of story I enjoy most, and the more we get like it the better. The others in my choice were, "Slaves of Mercury," "Loot of the Void, "Two Thousand Miles Below" and "Disowned."

I think the stories improve every issue, so keep up the good work.—G. D. Holland, 18 Sycamore Rd., Bournville, Birmingham, England.

Wesso-Paul

Dear Editor:

As for the contest between Wesso and Paul, I don't care who illustrates. Have Wesso do a cover and say Paul did it, and you will probably receive a lot of letters telling you how much better Paul is than Wesso. Or vice versa. Size, type and paper also make no difference to me, but start publishing bum stories and ye Ed will be no more.

In the latest issue all the stories were par excellent. "Raiders of the Universes" ranked highest, in my opinion, and "Slaves of Mercury" second. Give us more of Hawk Carse.—Oliver C. Davis, Big Pine, Cal.

Invitations

Have you a question of scientific nature you've been saving up? Send it in, on the coupon provided. We cannot undertake to answer all questions, but we'll make room in the Science Forum for those of greatest general interest.

Fill out and send in the Vote of Preference and Reader's Ballot, too, of course; and, if you have time, come and join in our discussions of stories, authors, scientific principles and possibilities (yes, and the throwing of brickbats and roses)—everything that's of common interest in connection with Astounding Stories.

This is *your* magazine, and you're cordially invited to make full use of it.

—*The Editor.*

My Story Preferences in This Issue

I enjoyed these stories most: **Remarks:**

1. ....

2. ....

3. ....

I enjoyed these stories least: **Remarks:**

1. ....

2. ....

3. ....

Name ....

Address ....

[It will help us know your story preferences if you will fill out and mail this coupon to Astounding Stories, 155 E. 44th St., New York City. Thank you!]

Photos ENLARGED

Size 16x20 inches

Same price for full length or bust form, groups, landscapes, or pet animals, etc., enlargements of any part of group picture. Safe return of your own original photo guaranteed. **98c**

SEND NO MONEY Just mail photo or snapshot (any size) and within a week you will receive your beautiful life-like enlargement size 16x20 in. guaranteed fadeless. Pay postman 98c plus postage or send $1.00 with order and we pay postage. **SPECIAL FREE OFFER** With each enlargement we will send Free a hand-tinted miniature reproduction of photo sent. Take advantage now of this amazing offer -- send your photo today.

UNITED PORTRAIT COMPANY
900 W. Lake St. Dept. W-592, Chicago, Ill.

Reducible Rupture Cured in Many Cases

Forget your rupture—*enjoy* normal activities and pleasures of life in heavenly comfort and security with my amazing, patented Air Cushion Appliance! Sent on trial—costs so little—helps so much! 3 millions sold. Neglect of rupture often fatal so act now—write for my Free Rupture Book and PROOF of cures! H. C. BROOKS, 599-C State St., Marshall, Michigan.

DEAFNESS IS MISERY

Many people with defective hearing and Head Noises enjoy conversation, go to Theatre and Church because they use Leonard Invisible Ear Drums which resemble Tiny Megaphones fitting in the Ear entirely out of sight. No wires, batteries or head piece. They are inexpensive. Write for booklet and sworn statement of the inventor who was himself deaf.

A. O. LEONARD, Inc., Suite 583, 70 5th Ave., New York

ASTHMA CAUSE DISCOVERED

Write for important booklet on Doctor Fugate's discovery of the *basic* cause of bronchial asthma and hay fever. No cost. No obligation. Simply address Dept. 8525, Fugate Co., 126 S. Meridian St., Indianapolis, Ind.

Write Today PATENTS

TIME COUNTS IN APPLYING for patents. Send sketch or model for instructions or write for free book, "How to Obtain a Patent" and "Record of Invention" form. No charge for information on how to proceed. Clarence A. O'Brien, Registered Patent Attorney, 1878 Adams Building, Washington, D. C.

PANTS MATCHED TO ANY SUIT-

DON'T DISCARD Your OLD SUIT

Wear the coat and vest another year by getting new trousers to match. Tailored to your measure. With over 100,000 patterns to select from we can match almost any pattern. Send vest or sample of cloth today, and we will submit FREE Sample of best match obtainable.

AMERICAN MATCH PANTS CO.
Dept. 12-P 6 W. Randolph St., CHICAGO, ILL.

LAW STUDY AT HOME

Legally trained men win high positions and big success in business and public life. Be independent. Greater opportunities now than ever before. Big corporations are headed by men with legal training. Earn

$5,000 to $10,000 Annually

We guide you step by step. You can train at home during spare time. Degree of LL. B. conferred. Successful graduates in every section of the United States. We furnish all text material, including fourteen-volume Law Library. Low cost, easy terms. Get our valuable 64-page "Law Guide" and "Evidence" books FREE. Send for them NOW.

LaSalle Extension University, Dept. 1275-L, Chicago
The World's Largest Business Training Institution

NEW LOW PRICES ON GOOD-YEAR - U.S. Firestone-Goodrich AND OTHER TIRES

FREE TUBE WITH EVERY ORDER FOR 2 TIRES

REAL SUPER VALUES This old reliable company is first choice with thousands of motorists who demand highest quality at lowest cost. Actual tests on roughest roads prove that standard brand tires reconstructed by the scientific Midland process deliver 50 to 60% more service. Order today, save money

12 Month Written Guaranty Bond WITH EACH TIRE ORDERED

BALLOON TIRES

Size Rim	Tires	Tubes
29x4.40-21"	$2.30	$0.85
29x4.50-20"	2.40	.85
30x4.50-21"	2.45	.85
28x4.75-19"	2.45	1.00
29x4.75-20"	2.50	1.00
29x5.00-19"	2.95	1.10
30x5.00-20"	2.95	1.10
28x5.25-18"	2.95	1.25
29x5.25-19"	2.95	1.25
30x5.25-20"	2.95	1.25
31x5.25-21"	3.10	1.25
28x5.50-18"	3.20	1.30
29x5.50-19"	3.10	1.30
30x6.00-18"	3.20	1.30
31x6.00-19"	3.20	1.30
32x6.00-20"	3.20	1.35
33x6.00-21"	3.20	1.35
32x6.50-20"	3.50	1.65

Reg. CORD Tires

Size	Tires	Tubes
30x3	$2.20	$0.80
30x3½	2.25	.85
31x4	2.95	.85
32x4	2.95	.85
33x4	2.95	.85
32x4½	3.20	1.15
33x4½	3.20	1.15
34x4½	3.45	1.15
30x5	3.60	1.65
33x5	3.60	1.65

All Other Sizes

ALL TUBES NEW GUARANTEED

Order 2 Tires Get Guaranteed Tube FREE

Send $1.00 Deposit with each tire ordered. Balance C. O. D. If you send cash in full deduct 5%. You are guaranteed a year's service or replacement at ½ price.

MIDLAND TIRE & RUBBER CO., Dept. 925
1000-10 West Sixty-Third Street, Chicago, Illinois

12 MONTHS SERVICE
$2.30

EARN MONEY AT HOME

YOU can make $15 to $50 weekly in spare or full time at home coloring photographs. No experience needed. No canvassing. We instruct you by our new simple Photo-Color process and supply you with work. Write for particulars and Free Book to-day.

The IRVING-VANCE COMPANY Ltd.
152 Hart Building, Toronto, Can.

Operator No. 38

FOLLOW THIS MAN

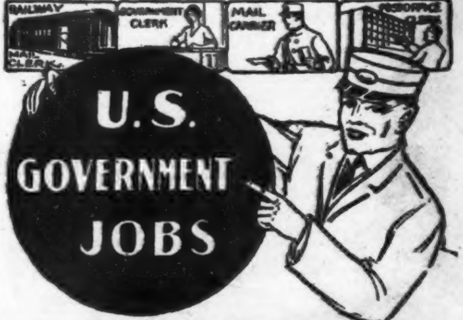
Secret Service Operator No. 38 is on the job! Running down dangerous Counterfeit Gang. Tell-tale finger prints in murdered girl's room.

Free *The Confidential Report Operator No. 38 made to his chief. Write for it.*

$3000 a year and up

YOU can become a Finger Print Expert at home, in your spare time, at small cost. Write for confidential full report and details. Literature will NOT be sent to boys under 17 years of age.

INSTITUTE OF APPLIED SCIENCE
1920 Sunnyside Ave.
Dept. 15-69 Chicago, Ill.



$1260 TO $3400 YEAR

Men - Women - 18 to 50

Hundreds Post-depression life jobs coming

Common Education usually sufficient

Mail Coupon Today—SURE

COUPON

FRANKLIN INSTITUTE
Dept. C276, Rochester, N.Y.

Gentlemen: Rush to me FREE list of U. S. Government big pay steady post-depression life positions. 32-page book describing salaries, hours, work, and how to get a position.

Name ....
Address ....

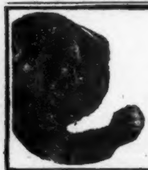
NEW VIGOR
for Men Past 40

No man need be discouraged because age, overwork, nerve strain and worry have lowered his vital powers. Nerve force and manly vigor is quickly replenished as rich new blood revitalizes tired nerves and weak organs. Plenty of Iron in the blood gives pep and power, energy and endurance.

DR. JAYNE'S TONIC PILLS

This potent tonic is guaranteed by every druggist. **Red Blood is completely renewed in 6 weeks.** Make new blood richer in iron! Strengthen tired nerves and weak organs! Get rid of weakness, headaches, nervousness, underweight and the many other troubles often due to weak, thin, watery blood. Ask your druggist or send $1 direct to

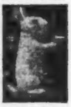
DR. D. JAYNE & SON Inc. (102 Years Old)
2 Vine St., Phila., Pa. Dept. B-72



Learn Public Speaking

At home—in spare time—20 minutes a day. Overcome "stage-fright," gain self-confidence, increase your salary, through ability to sway others by effective speech. Write now for free booklet, *How to Work Wonders With Words.*

NORTH AMERICAN INSTITUTE, Dept. 1189
3601 Michigan Avenue, Chicago, Illinois



Learn to **MOUNT BIRDS**

Be an expert Taxidermist. We teach you at home **By Mail** to mount **Birds, Animals, Game-Heads**; to tan skins. Mount wild game also common animals, squirrels, rabbits, frogs and pigeons. **Big Profits** in spare time. **FREE BOOK** Tells all about Taxidermy—how to have a wonderful hobby and how to turn your spare time into **Sure Profits. Free.** Send Today. Don't delay. State Age.

N.W. SCHOOL OF TAXIDERMY, 3039 Court Bldg., Omaha, Neb.

PINS FOR YOUR CLASS CLUB OR SOCIETY
LOWEST PRICES...BIGGEST CHOICE!

35¢ UP High Quality - Low Price; the combination that has kept Bastian, the club pin pioneer, out in front for 37 years! Clean cut work and wearing quality distinguish a Bastian pin anywhere.

BASTIAN BROS. CO. 212 Bastian Bldg., Rochester, N. Y.

Write For our 1933 **FREE** CATALOG
Over 300 Designs Color Illustrations

High School Course in 2 Years

You can complete this simplified High School Course at home inside of two years. Meets all requirements for entrance to college and the leading professions. This and thirty-six other practical courses are described in our Free Bulletin. Send for it TODAY.

AMERICAN SCHOOL
Dept. H-937 Drexel Ave. & 58th St. © A S 1923 CHICAGO

REAL JOBS OPEN
For Trained Auto Mechanics

Step into big pay. Earn $35 to $70 a week. I train you in only 8 weeks at largest school of its kind in world. New practical shop plan. Learn with real tools . . . on real equipment. Write quick for Big Free Auto Book and Special Low Tuition offer. No obligation. Add. J. H. McSweeny.

McSWEENY SCHOOL Cleveland, Ohio Dept. A-22-12

FREE BOOK

BECOME AN EXPERT
ACCOUNTANT

Executive Accountants and C. P. A.'s earn $3,000 to $15,000 a year. Thousands of firms need them. Only 12,000 Certified Public Accountants in the United States. We train you thorely at home in spare time for C.P.A. examinations or executive accounting positions. Previous experience unnecessary. Training under the personal supervision of William B. Castenholz, A. M., C. P. A., and a large staff of C. P. A.'s, including members of the American Institute of Accountants. Write for free book, "Accountancy, the Profession that Pays."

LaSalle Extension University, Dept. 1275-H, Chicago
The School That Has Trained Over 1,100 C. P. A.'s

MONEY FOR YOU AT HOME

YOU can earn good money in spare time at home making display cards. No selling or canvassing. We instruct you, furnish complete outfit and supply you with work. Write to-day for free booklet.

The MENHENITT COMPANY, Limited
245 Dominion Bldg., Toronto, Ont.

BE A PASSENGER TRAFFIC INSPECTOR

LET US TRAIN YOU AND PLACE
ACTIVE men—19 to 55 wanted for *Bus Passenger Traffic Inspection Work.* outdoors; travel or stay near home. vances after a few months' experience. pletion of a few weeks' simple home-study, place you at $120 to $150 per month up, penses, to start, *or refund tuition.* Free Costs little—terms. Standard Business ing Institute, Div. 1312, Buffalo, N. Y.

DO YOU WANT TO STOP TOBACCO

Banish the craving for tobacco thousands have. Make yourself and happy with Tobacco Redeemer. Not a substitute, not habit forming. Write for free booklet telling of injurious effect of tobacco and dependable, easy way to relieve the craving many men have.

NewellPharmacalCo.
Dept. 600, St. Louis, Mo.

FREE BOOK

FOREST JOBS

easily available. $125-$200 per month. Permanent. Cabin, hunt, trap, patrol.

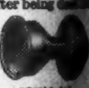
Get details immediately

Rayson Service Bureau, Dept. K-52, Denver, Colo.

BIG MONEY SELLING SHIRTS

AGENTS WANTED to represent old-established firm and take orders. Make Big Money every day selling Dress Shirts, Work Shirts, Neckwear, Underwear, Dresses, Hosiery, Smocks, Pajamas, Lumberjacks, Sweaters, Leathercoats, Pants, Play Suits, Overalls, Coveralls, Raincoats, Office Coats, Uniforms. Everything Guaranteed. Experience unnecessary. OUTFIT FREE! Write quick.

NIMROD CO., Dept. 75
4922-28 Lincoln Ave. Chicago, Ill.



NO JOKE TO BE DEAF

—EVERY DEAF PERSON KNOWS THAT
George P. Way made himself hear, after being deaf 25 years, with Artificial Ear Drums—his own invention. He wore them day and night. They stopped head noises and ringing ears. They are invisible and perfectly comfortable. No one sees them. Write for his true story, "How I Got Deaf and Made Myself Hear." Also booklet on Deafness. Address

Artificial Ear Drum

George P. Way, Inc., 737 Hofmann Building, Detroit, Michigan

PATENTS AND TRADE MARKS

Protect your inventive ideas. Expert Personal Service. Submit data and $5 for preliminary search.

LESTER L. SARGENT
Registered Patent Attorney
1115 K St. N. W. Washington, D. C.

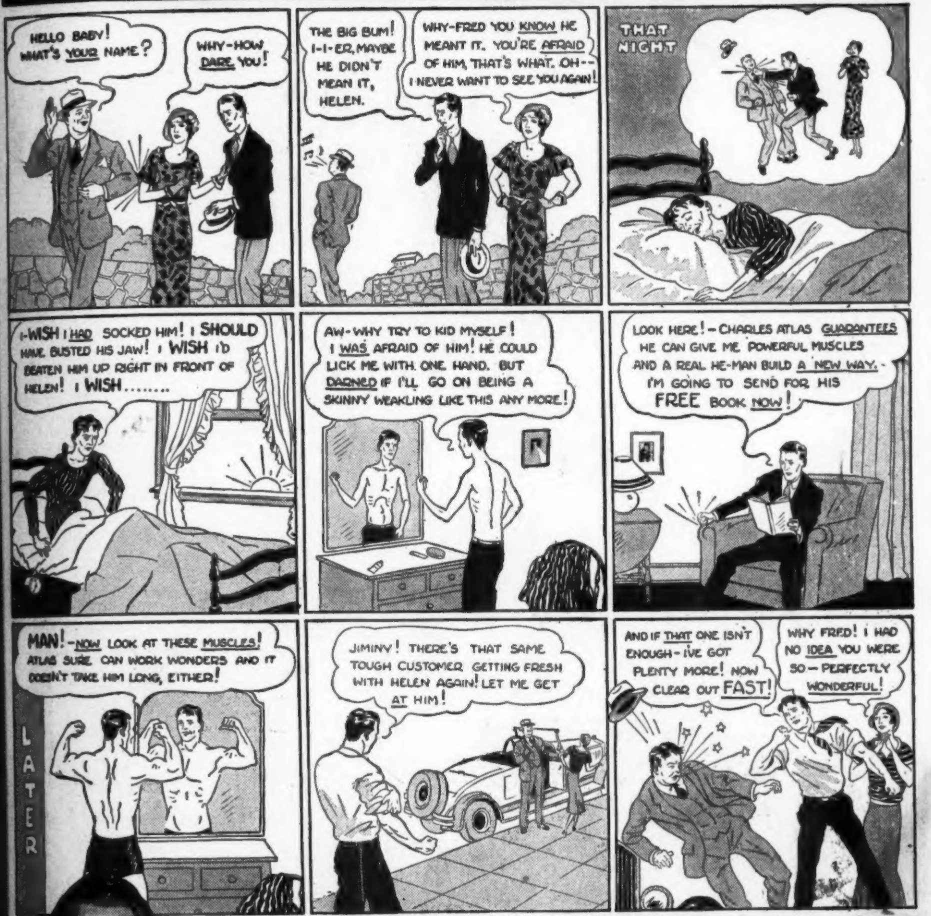
Be A Detective
Make Secret Investigations

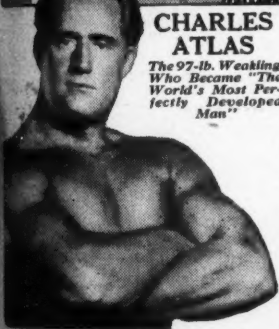
Earn Big Money. Work home or travel. Fascinating work. Experience unnecessary.

DETECTIVE Particulars FREE. Write to
GEORGE N. WAGNER 2640 Broadway, N. Y.

TH
HEL
WHAT
I-WISH
HAVE B
BEATE
HELEN
MAN
ATLAS
DOESN
LATER

THE BATTLE FOUGHT IN BED THAT MADE FRED A HE-MAN!


HELLO BABY! WHAT'S YOUR NAME?
WHY-HOW DARE YOU!
THE BIG BUM! I-I-ER, MAYBE HE DIDN'T MEAN IT, HELEN.
WHY-FRED YOU KNOW HE MEANT IT. YOU'RE AFRAID OF HIM, THAT'S WHAT. OH-- I NEVER WANT TO SEE YOU AGAIN!
THAT NIGHT
I-WISH I HAD SOCKED HIM! I SHOULD HAVE BUSTED HIS JAW! I WISH I'D BEATEN HIM UP RIGHT IN FRONT OF HELEN! I WISH........
AW-WHY TRY TO KID MYSELF! I WAS AFRAID OF HIM! HE COULD LICK ME WITH ONE HAND. BUT DARNED IF I'LL GO ON BEING A SKINNY WEAKLING LIKE THIS ANY MORE!
LOOK HERE! - CHARLES ATLAS GUARANTEES HE CAN GIVE ME POWERFUL MUSCLES AND A REAL HE-MAN BUILD A NEW WAY. - I'M GOING TO SEND FOR HIS FREE BOOK NOW!
MAN! - NOW LOOK AT THESE MUSCLES! ATLAS SURE CAN WORK WONDERS AND IT DOESN'T TAKE HIM LONG, EITHER!
LATER
JIMINY! THERE'S THAT SAME TOUGH CUSTOMER GETTING FRESH WITH HELEN AGAIN! LET ME GET AT HIM!
AND IF THAT ONE ISN'T ENOUGH - I'VE GOT PLENTY MORE! NOW CLEAR OUT FAST!
WHY FRED! I HAD NO IDEA YOU WERE SO - PERFECTLY WONDERFUL!



CHARLES ATLAS

The 97-lb. Weakling Who Became "The World's Most Perfectly Developed Man"

"I'll Give You PROOF in Just 7 Days That You Can Have a Body Like Mine!"

GET this straight, friend—I know what I'm talking about. In just 7 days I'll prove to YOU that I can make you a NEW MAN—a 100% HE-MAN, ready every minute for fun or for fight! I don't care how skinny, flabby or fat you may be. I don't care how discouraged you are about your body.

My secret is *Dynamic Tension*—the amazing discovery that developed me from a 97-lb. bag of bones into twice winning the free-for-all title of "World's Most Perfectly Developed Man." And, *with* it, I'll show you the way to a perfect body, glowing health, rippling muscles, giant power, and a fist that packs a genuine punch.

At my own risk. **I'll PROVE I can do it. I'll give you actual tape-measure evidence that I can add huskiness to your chest and shoulders, smashing power to your arms, surging strength and handsome proportions to every inch of your build! *Without* pills, dieting, or apparatus that may strain your heart or other vital organs.**

I can make you the fellow that men respect and women admire, in just a *few minutes* a day. Mail coupon NOW for my illustrated book, "Everlasting Health and Strength." Tells all about *Dynamic Tension*. Shows actual photos. It's a valuable book—and it's FREE. Send for your copy *today*. Address me personally. CHARLES ATLAS, Dept. 9-YY, 133 East 23rd Street, New York City

CHARLES ATLAS,
Dept. 9-YY, 133 East 23d St.,
New York City

I want the proof that your system of DYNAMIC TENSION will make a New Man of me—give me a healthy, husky body and big muscle development. Send me your free book, "Everlasting Health and Strength."

NAME ....
(Please write or print plainly)

ADDRESS ....

CITY .... STATE ....

© 1932, C.A. Ltd.

NEVER PARCHED • NEVER TOASTED

CAMELS are always FRESH!

SWITCH to Camels and learn the mildness of a fresh, cool-burning cigarette. A blend of choice Turkish and mellow, sun-ripened Domestic tobaccos, Camels are never parched or toasted. That's why we say smoke them for one day, then leave them—if you can.

R. J. REYNOLDS TOBACCO CO.
Winston-Salem, N. C.

Smoke a FRESH cigarette
Camel
Camel Humidor Pack
CAMELS
Made FRESH—Kept FRESH

Don't remove the Camel Humidor Pack—it is protection against perfume and powder odors, dust and germs. Buy Camels by the carton for home or office. The Humidor Pack keeps Camels fresh

© [illegible], R. J. Reynolds Tobacco Company